DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XD052]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the Hydaburg Seaplane Base Refurbishment Project in Hydaburg, Alaska

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorization; request for comments on proposed authorization and possible renewal.

SUMMARY: NMFS has received a request from the Alaska Department of Transportation and Public Facilities (DOT&PF) for authorization to take marine mammals incidental to the Hydaburg Seaplane Base Refurbishment Project in Hydaburg, Alaska. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on a possible one-time, 1-year renewal that could be issued under certain circumstances and if all requirements are met, as described in Request for Public Comments at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorization and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than August 16, 2023.

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, and should be submitted via email to *ITP.tyson.moore@noaa.gov*. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities*. In case of problems accessing these documents, please call the contact listed below.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and will generally be posted online at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities* without change. All personal identifying information (*e.g.,* name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Reny Tyson Moore, Office of Protected Resources, NMFS, (301) 427–8401.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the ''take'' of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are proposed or, if the taking is limited to harassment, a notice of a proposed IHA is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other ''means of effecting the least practicable adverse impact'' on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as ''mitigation''); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216–6A, NMFS must review our proposed action (*i.e.,* the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NAO 216–6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review.

We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On June 28, 2022, NMFS received a request from DOT&PF for an IHA to take marine mammals incidental to the Hydaburg Seaplane Base Refurbishment Project in Hydaburg, Alaska. Following NMFS' review of the application, and multiple discussions between DOT&PF and NMFS, DOT&PF submitted responses to NMFS questions on December 15, 2022 and a revised application on February 22, 2023. The application was deemed adequate and complete on March 13, 2023. DOT&PF's request is for take of nine species of marine mammals by Level B harassment and, for a subset of these species (*i.e.,* harbor seal (*Phoca vitulina*), northern elephant seal (*Mirounga angustirostris*), harbor porpoise (*Phocoena phocoena*), Dall's porpoise (*Phocoenoides dalli*), humpback whale (*Megaptera novaeangliae*), and minke whale (*Balaenoptera acutorostrata*)), Level A harassment. Neither DOT&PF nor NMFS expect serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

Description of Proposed Activity

Overview

DOT&PF, in cooperation with the Federal Aviation Administration, is proposing maintenance improvements to the existing Hydaburg Seaplane Base as part of the Hydaburg Seaplane Base Refurbishment Project. The existing facility has experienced deterioration in recent years, and DOT&PF has conducted several repair projects. The facility is near the end of its useful life, and replacement of the existing float structures is required to continue safe operation in the future. The in-water portion of the project would include the removal of five existing steel piles and installation of eight permanent steel piles to support replacement of the floating dock structure. Up to 10 temporary steel piles would be installed to support permanent pile installation and would be removed following completion of permanent pile installation. Proposed activities included as part of the project with potential to affect marine mammals include vibratory removal, down-the-hole (DTH) installation, and vibratory and impact installation of steel pipe piles.

Dates and Duration

The proposed IHA would be effective from September 15, 2023, through September 14, 2024. Construction of the proposed project is anticipated to occur over approximately 2 months beginning in early fall 2023. Pile installation and removal will be intermittent during this period, depending on weather, construction and mechanical delays, protected species shutdowns, and other potential delays and logistical constraints. Pile installation will occur intermittently during the work period for durations of minutes to hours at a time. Pile installation and removal will occur over 26 nonconsecutive days within the 2-month construction window. DOT&PF plans to conduct all work during daylight hours.

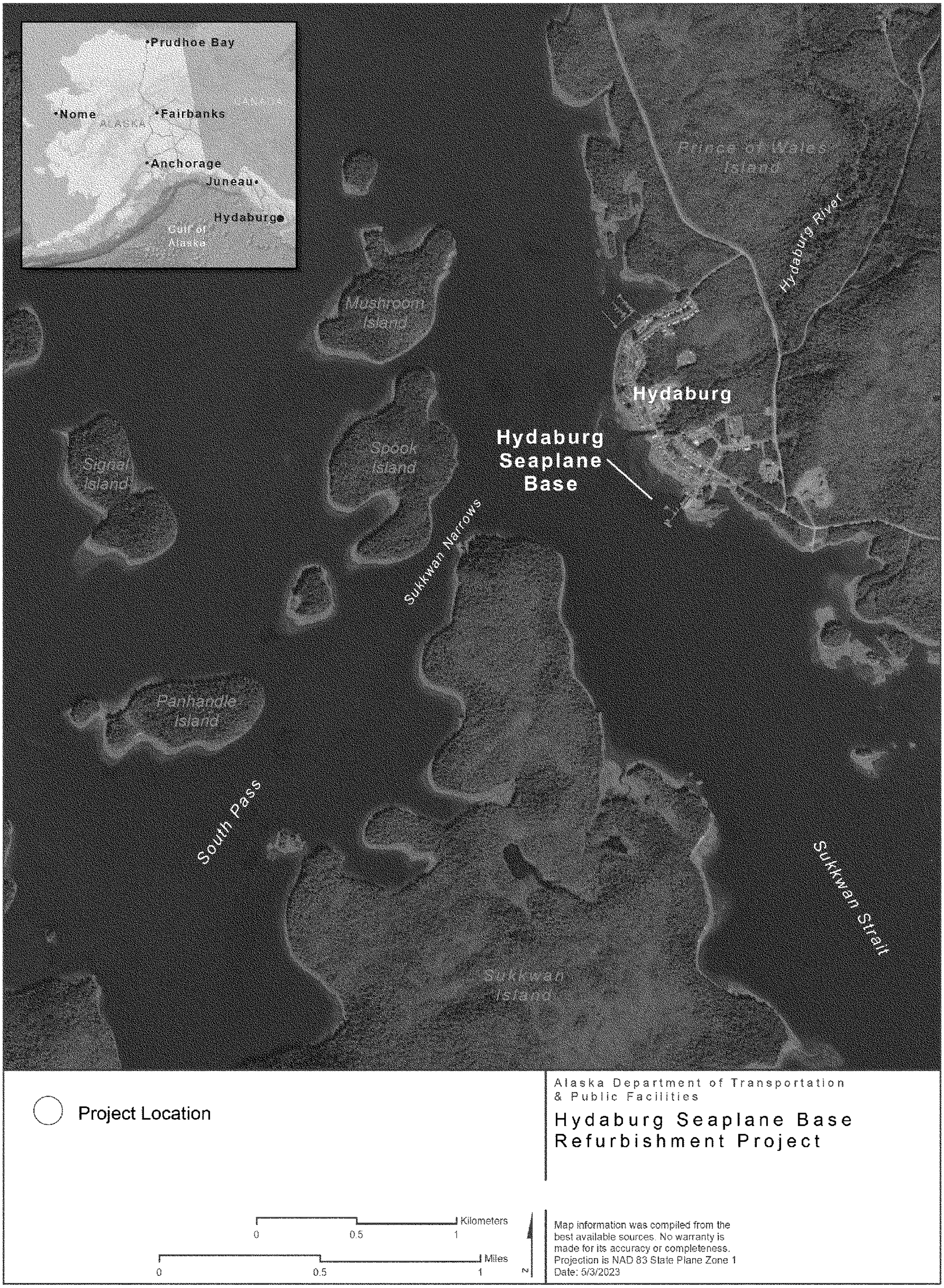
Specific Geographic Region

The project site is located in the City of Hydaburg, on Prince of Wales Island, approximately 76 kilometers (km) west of Ketchikan, in southeast Alaska. The Hydaburg Seaplane Base is located at the south end of Hydaburg, attached to the Hydaburg city dock on the north shore of the Sukkwan Strait (Figure 1).

Hydaburg is located along the Sukkwan Strait on the southwest side of Prince of Wales Island. A series of passes and straits lead to the open Pacific Ocean; however, Hydaburg is tucked in a relatively calm and secluded area. Sukkwan Strait is generally characterized by semidiurnal tides with mean tidal ranges of around 5 meters (m). Freshwater inputs to Sukkwan Strait include multiple anadromous streams: Hydaburg River, Saltery Creek, and two streams originating from unnamed lakes. The bathymetry of the bay is variable depending on location and proximity to shore, islands, or rocks. Depths approach 76 m within Sukkwan Strait and up to 37 m in South Pass.

Ongoing vessel activities near Hydaburg, as well as land-based industrial and commercial activities, result in elevated in-air and underwater acoustic conditions in the project area that likely increase with proximity to the project site. Background sound levels likely vary seasonally, with elevated levels during summer when the commercial and fishing industries are at their peaks. Hydaburg has no cruise ship or ferry facilities, so only commercial and fishing vessels visit Hydaburg regularly (Miller *et al.,* 2019).

BILLING CODE 3510–22–P



BILLING CODE 3510–22–C

Figure 1—Location of Seaplane Base in Hydaburg, Alaska

Detailed Description of the Specified Activity

The DOT&PF proposed project would involve the removal of five existing cantilever steel pipe piles (16-inch (40.64-centimeter (cm)) diameter) that support the existing multiple-float structure. The multiple-float timber structure, which covers 372 square m (m^2), would also be removed. A new 446-m^2 single-float timber structure would be installed in the same general location. Four 24-inch (60.96-cm) and four 20-inch (50.80-cm) permanent steel pipe piles would be installed vertically to act as restraints for the new seaplane float. Up to 10 temporary 24-inch (60.96 cm) steel pipe piles would be installed to support pile installation and would be removed following completion of construction. Rock sockets and tension anchors would be required on all 24-inch (60.96 cm) piles and two 20-inch (50.80 cm) piles. Rock sockets would also be potentially required on five of the temporary piles. See Table 1 for a summary of the numbers and types of piles to be installed and removed, as well as the estimated durations of each activity.

TABLE 1—SUMMARY OF PILES TO BE INSTALLED AND REMOVED

Pile diameter and type	Number of piles	Number of rock sockets	Number of tension anchors	Impact strikes per pile	Vibratory duration per pile (minutes)	Rock socket DTH pile Installation, duration per pile, minutes (range)	Tension anchor DTH pile installation, duration per pile, minutes (range)	Total duration of activity per pile, hours	Typical production rate in piles per day (range)	Days of installation or removal
Pile Installation										
24″ Steel Plumb Piles (Permanent)	4	4	4	50	15	240 (60–480)	120 (60–240)	6.75	0.5 (0–1)	8
20″ Steel Plumb Piles (Permanent)	4	2	2	50	15	240 (60–480)	120 (60–240)	[1] 0.75/6.75	0.5 (0–1)	8
24″ Steel Piles (Temporary)	10	5	N/A	N/A	15	240 (60–480)	N/A	4.25	2.5 (1–10)	4
Pile Removal										
16″ Steel Cantilevered Piles	5	N/A	N/A	N/A	30	N/A	N/A	0.5	2.5 (2–4)	2
24″ Steel Piles (Temporary)	10	N/A	N/A	N/A	30	N/A	N/A	0.5	2.5 (2–4)	2
Totals	23	11	6	N/A	N/A	N/A	N/A	N/A	N/A	26

[1] Two of the 20-inch plumb piles will include vibratory and impact installation in addition to rock sockets and tension anchors, estimated at 6.75 hours duration total, and two will only use vibratory and impact, estimated at 0.75 hours duration total.

DTH pile installation would involve drilling rock sockets into the bedrock to support installation of piles. A rock socket is a pile inserted into a drilled hole in the underlying bedrock after the pile has been driven through the overlying softer sediments to refusal by vibratory or impact methods. The pile is advanced farther into the drilled hole to properly secure the bottom portion of the pile into the rock. The depth of the rock socket varies, but up to 6 m may be required for this project. The diameter of the rock socket is slightly larger than the pile being driven. Rock sockets are constructed using a DTH device that consists of a drill bit that drills through the bedrock using both rotary and percussion mechanisms. This breaks up the rock to allow removal of the fragments and insertion of the pile. The pile is advanced at the same time that drilling occurs. Drill cuttings are expelled from the top of the pile using compressed air. It is estimated that drilling rock sockets into the bedrock may take on average 4 hours per pile.

Tension anchors would be installed in six of the permanent piles (four 24-inch (60.96-cm) and two 20-inch (50.80-cm) piles). Tension anchors are installed within piles that are drilled into the bedrock below the elevation of the pile tip after the pile has been driven through the sediment layer to refusal. A 6- or 8-inch (15.24- or 20.32-cm) diameter steel pipe casing would be inserted inside the larger diameter production pile. A rock drill would be inserted into the casing, and a 6- to 8-inch (15.24- to 20.32-cm) diameter hole would be drilled into bedrock with rotary and percussion drilling methods. The drilling work is contained within the steel pile casing and the steel pipe pile. The typical depth of the drilled tension anchor hole varies, but 6–9 m is common. Rock fragments would be removed through the top of the casing with compressed air. A steel rod would then be grouted into the drilled hole and affixed to the top of the pile. The purpose of a tension anchor is to secure the pile to the bedrock to withstand uplift forces. It is estimated that tension anchor installation will take about 1–4 hours per pile. Hereafter, DTH pile installation refers to both rock socket drilling and tension anchor installation unless specified. See Figure 1–3 in the DOT&PF's application for a schematic of DTH pile installation and tension anchor techniques.

Pile removal would be conducted using a vibratory hammer. Pile installation would be conducted using both a vibratory and an impact hammer and DTH pile installation methods. Piles would be advanced to refusal using a vibratory hammer. After DTH pile installation, the final approximately 3 m of driving would be conducted using an impact hammer so that the structural capacity of the pile embedment could be verified. The pile installation methods used would depend on sediment depth and conditions at each pile location. Pile installation and removal would occur in waters approximately 6–7 m in depth.

Actual numbers and sizes of piles, installation times, numbers of impact strikes, and other design and construction details and methods may vary slightly from the estimates outlined in this document. The DOT&PF does not anticipate that the project will change such that potential impacts on marine mammals will change or vary from those described here.

Proposed mitigation, monitoring, and reporting measures are described in detail later in this document (please see Proposed Mitigation and Proposed Monitoring and Reporting).

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the DOT&PF's application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history of the potentially affected species. NMFS fully considered all of this information, and we refer the reader to these descriptions, referenced here, instead of reprinting the information. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.,* physical and behavioral descriptions) may be found on NMFS' website (*https://www.fisheries.noaa.gov/find-species*).

Table 2 lists all species or stocks for which take is expected and proposed to be authorized for this activity, and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS' SARs). While no serious injury or mortality is expected to occur, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species or stocks and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All stocks managed under the MMPA in this region are assessed in NMFS' U.S. Alaska and Pacific SARs (*e.g.,* Carretta, *et al.,* 2022; Muto *et al.,* 2022). All values presented in Table 2 are the most recent available at the time of publication (including from the draft 2022 SARs, Young *et al.,* 2022) and are available online at: *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*).

TABLE 2—SPECIES [4] LIKELY IMPACTED BY THE SPECIFIED ACTIVITIES

Common name	Scientific name	Stock	ESA/MMPA status; strategic (Y/N) [1]	Stock abundance (CV, N_{min}, most recent abundance survey) [2]	PBR	Annual M/SI [3]
Order Artiodactyla—Cetacea—Mysticeti (baleen whales)						
Family Eschrichtiidae:						
Gray Whale	*Eschrichtius robustus*	Eastern N Pacific	-, -, N	26,960 (0.05, 25,849, 2016)	801	131
Family Balaenopteridae (rorquals):						
Humpback Whale	*Megaptera novaeangliae*	Central N Pacific	-, -, Y	10,103 (0.3, 7,891, 2006)	3.4	4.46
Minke Whale	*Balaenoptera acutorostrata*	Alaska	-, -, N	N/A (N/A, N/A, N/A)	UND	0
Odontoceti (toothed whales, dolphins, and porpoises)						
Family Physeteridae:						
Sperm Whale	*Physeter macrocephalus*	N Pacific	E, D, Y	UND (UND, UND, 2015)	UND	3.5
Family Delphinidae:						
Killer Whale	*Orcinus orca*	Eastern North Pacific Alaska Resident.	-, -, N	1,920 (N/A, 1,920, 2019)	19	1.3
Killer Whale	*Orcinus orca*	Eastern Northern Pacific Northern Resident.	-, -, N	302 (N/A, 302, 2018)	2.2	0.2
Killer Whale	*Orcinus orca*	West Coast Transient	-, -, N	349 (N/A, 349, 2018)	3.5	0.4
Pacific White-Sided Dolphin.	*Lagenorhynchus obliquidens*	N Pacific	-, -, N	26,880 (N/A, N/A, 1990)	UND	0
Family Phocoenidae (porpoises):						
Dall's Porpoise	*Phocoenoides dalli*	Alaska	-, -, N	UND (UND, UND, 2015)	UND	37
Harbor Porpoise	*Phocoena*	Southeast Alaska	-, -, Y	UND (UND, UND, 2019)	UND	34
Order Carnivora—Pinnipedia						
Family Otariidae (eared seals and sea lions):						
Steller Sea Lion	*Eumetopias jubatus*	Eastern	-, -, N	43,201 (N/A, 43,201, 2017)	2,592	112
Family Phocidae (earless seals):						
Harbor Seal	*Phoca vitulina*	Dixon/Cape Decision	-, -, N	23,478 (N/A, 21,453, 2015)	644	69
Northern Elephant Seal	*Mirounga angustirostris*	CA Breeding	-, -, N	187,386 (N/A, 85,369, 2013)	5,122	13.7

[1] ESA status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

[2] NMFS marine mammal stock assessment reports online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region/.* CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable (N/A)

[3] These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.,* commercial fisheries, ship strike). Annual human caused mortality and serious injury (M/SI) often cannot be determined precisely and is in some cases presented as a minimum value or range.

[4] Information on the classification of marine mammal species can be found on the web page for The Society for Marine Mammalogy's Committee on Taxonomy (*https://marinemammalscience.org/science-and-publications/list-marine-mammal-species-subspecies/;* Committee on Taxonomy (2022)).

On January 24, 2023, NMFS published the draft 2022 SARs (*https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region*). The Alaska and Pacific SARs include a proposed update to the humpback whale stock structure and the Alaska SAR includes a proposed update to the Southeast Alaska harbor porpoise stock structure. These new structures, if finalized, would modify the MMPA-designated humpback stocks to align more closely with the ESA-designated distinct population segments (DPSs), and for harbor porpoise to align with genetics, trends in abundance, and discontinuous distribution NMFS has proposed as supporting the delineation of two demographically independent populations. Please refer to the draft 2022 Alaska and Pacific SARs for additional information.

NMFS Office of Protected Resources, Permits and Conservation Division has generally considered peer-reviewed data in draft SARs (relative to data provided in the most recent final SARs), when available, as the best available science, and has done so here for all species and stocks, with the exception of the new proposal to revise humpback whale and harbor porpoise stock structure. Given that the proposed changes to the stock structures involve application of NMFS' Guidance for Assessing Marine Mammals Stocks and could be revised following consideration of public comments, it is more appropriate to conduct our analysis in this proposed authorization based on the status quo stock structure identified in the most recent final SARs for those species (Carretta *et al.,* 2022; Muto *et al.,* 2022).

All species that could potentially occur in the proposed survey areas are included in Table 2 of the IHA application. While gray whale and sperm whale have occurred in northern Southeast Alaska in recent years, they are highly unlikely to occur in the proposed project area. The temporal and/or spatial occurrence of these species is such that take is not expected to occur, and they are not discussed further. The remaining 9 species (with 11 managed stocks) in Table 2 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur, and we have proposed authorizing it.

Steller Sea Lion

Steller sea lions are found throughout the northern Pacific Ocean, including coastal and inland waters from Russia (Kuril Islands and the Sea of Okhotsk), east to Alaska, and south to central California (Año Nuevo Island). Steller sea lions were listed as threatened range-wide under the ESA on November 26, 1990 (55 FR 49204); they were subsequently partitioned into the western and eastern DPSs (and MMPA stocks) in 1997 (62 FR 24345, May 5, 1997). The eastern DPS remained classified as threatened (62 FR 24345) until it was delisted in November 2013, while the western DPS (those individuals west of 144° W longitude or Cape Suckling, Alaska) was upgraded to endangered status following separation of the DPSs, and it remains endangered today. There is regular movement of both DPSs across this 144° W longitude boundary (Jemison *et al.,* 2013), however, due to the distance from this DPS boundary, it is likely that only eastern DPS Steller sea lions are present in the project area. Therefore, animals potentially affected by the project are assumed to be part of the eastern DPS.

Steller sea lions are opportunistic predators, feeding primarily on a wide variety of fishes and cephalopods, including Pacific herring (*Clupea pallasi*), walleye pollock (*Gadus chalcogramma*), capelin (*Mallotus villosus*), Pacific sand lance (*Ammodytes hexapterus*), Pacific cod (*Gadus macrocephalus*), salmon (*Oncorhynchus spp.*), and squid (*Teuthida spp.*; Jefferson *et al.,* 2008; Wynne *et al.,* 2011). Steller sea lions do not generally eat every day, but tend to forage every 1–2 days and return to haulouts to rest between foraging trips (Merrick and Loughlin, 1997; Rehberg *et al.,* 2009).

Steller sea lions are not common in the project area and systematic counts or surveys have not been completed in the area directly surrounding Hydaburg. The nearest documented haulout is Point Islet (Point Rock), about 13 km southeast of Hydaburg (see Figure 4–1 in the DOT&PF's application). No Steller sea lions were present during aerial surveys over Point Islet that occurred during 2013, 2015, or 2017 (Fritz *et al.,* 2016b; Sweeney *et al.,* 2017), and it was not surveyed in 2019 (Sweeney *et al.,* 2019). Anecdotal evidence provided by local residents indicates that Steller sea lions are rare and do not occur regularly near the project area. However, Steller sea lion presence could be higher during the late summer and early fall salmon runs.

Harbor Seal

Harbor seals range from Baja California north along the west coasts of California, Oregon, Washington, British Columbia, and Southeast Alaska; west through the Gulf of Alaska, Prince William Sound, and the Aleutian Islands; and north in the Bering Sea to Cape Newenham and the Pribilof Islands. In 2010, harbor seals in Alaska were partitioned into 12 separate stocks based largely on genetic structure (Allen and Angliss, 2010). Harbor seals present near Hydaburg are recognized as part of the Dixon/Cape Decision stock.

Harbor seals haul out on rocks, reefs, beaches, and drifting glacial ice, and feed in marine, estuarine, and occasionally fresh waters (Muto *et al.,* 2022). Harbor seals generally are non-migratory, with local movements associated with such factors as tides, weather, season, food availability, and reproduction (Scheffer and Slipp, 1944; Fisher 1952; Bigg, 1969, 1981; Hastings *et al.,* 2004). The results of past and recent satellite tagging studies in Southeast Alaska, Prince William Sound, Kodiak Island, and Cook Inlet are also consistent with the conclusion that harbor seals are non-migratory (Swain *et al.,* 1996; Lowry *et al.,* 2001; Small *et al.,* 2003; Boveng *et al.,* 2012). However, some long-distance movements of tagged animals in Alaska have been recorded (Pitcher and McAllister, 1981; Lowry *et al.,* 2001; Small *et al.,* 2003; Womble, 2012; Womble and Gende, 2013).

Harbor seals usually give birth to a single pup between May and mid-July. Birthing locations are often dispersed over several haulout sites and not confined to major rookeries (Klinkhart *et al.,* 2008). Strong fidelity of individuals for haul-out sites during the breeding season though have been documented in several populations (Härkönen and Harding, 2001), including some regions in Alaska such as Kodiak Island, Prince William Sound, Glacier Bay/Icy Strait, and Cook Inlet (Pitcher and McAllister, 1981; Small *et al.,* 2005; Boveng *et al.,* 2012; Womble, 2012; Womble and Gende, 2013).

Harbor seals forage on fish and invertebrates (Orr *et al.,* 2004) including capelin, eulachon (*Thaleichthys pacificus*), cod, pollock, flatfish, shrimp, octopus, and squid (Wynne, 2012). They are opportunistic feeders that forage in marine, estuarine, and occasionally freshwater habitat, adjusting their foraging behavior to take advantage of prey that are locally and seasonally abundant (Payne and Selzer, 1989). Depending on prey availability, research has demonstrated that harbor seals conduct both shallow and deep dives while foraging (Tollit *et al.,* 1997).

Harbor seals are commonly sighted in the waters of the inside passages throughout Southeast Alaska. Surveys have been rarely carried out on Dixon/Cape Decision, with the last surveys taking place between 2007 to 2011 and 2015. The NMFS Alaska Fisheries

Science Center identifies two ''key'' haulouts, or haulouts that have had 50 or more harbor seals documented during surveys, in Sukkwan Strait and four additional ''not key'' haulouts, those with fewer than 50 harbor seals documented during surveys, near the proposed project area (see Figure 4–2 in the DOT&PF's application) (NOAA, 2021). NMFS aerial survey data indicate that as few as 0 to as many as 157 harbor seals were sighted near the project area during surveys between 2003 and 2011 (Areas BD28 and BD30; NOAA, 2022). However, local residents report that only a few (two to four) harbor seals are regularly observed near Hydaburg. These individuals are generally observed near the small boat harbor outside of the proposed project area and during peak salmon runs in late summer and early fall. Harbor seals are known to be curious and may approach novel activity, so it is possible that some may enter the proposed project area during pile installation and removal.

Northern Elephant Seal

Northern elephant seals are wide-ranging throughout the North Pacific, spending as much as 80 percent of their time at sea (Hindell and Perrin, 2009). Populations of northern elephant seals in the U.S. and Mexico have recovered after being nearly hunted to extinction (Stewart *et al.,* 1994). Northern elephant seals underwent a severe population bottleneck and loss of genetic diversity when the population was reduced to an estimated 10–30 individuals (Hoelzel *et al.,* 2002). Since 1998, northern elephant seals have been undergoing a large population increase, estimated at 3.1 percent annually (Lowry *et al.,* 2020). There are two demographically isolated breeding populations: the California breeding population and the Baja California population. No international agreements exist for the joint management of this species by the U.S. and Mexico. The California breeding population is considered to be a separate stock. Any northern elephant seals observed near Hydaburg would be considered part of the California breeding stock.

Spatial segregation in foraging areas between males and females is evident from satellite tag data (Le Beouf *et al.,* 2000). Males migrate to the Gulf of Alaska and western Aleutian Islands along the continental shelf to feed on benthic prey, while females migrate to pelagic areas in the Gulf of Alaska and the central North Pacific to feed on pelagic prey (Le Beouf *et al.,* 2000). Elephant seals spend a majority of their time at sea (average of 74.7 days during post breeding migration and an average of 218.5 days during the post-molting migration; Robinson *et al.,* 2012). Although northern elephant seals are known to visit the Gulf of Alaska to feed on benthic prey, they rarely occur on the beaches of Alaska.

Northern elephant seals breed and give birth in California and Baja Mexico, primarily on offshore islands (Stewart *et al.,* 1994, from December to March (Stewart and Huber, 1993)) before dispersing widely across the North Pacific (Le Boeuf *et al.,* 2000). Although movement and genetic exchange continues between rookeries, most elephant seals return to natal rookeries when they start breeding (Huber *et al.,* 1991). Gestation in elephant seals lasts 11 months, with births taking place onshore when seals are at the breeding colony (Stewart *et al.,* 1994).

There is a low probability that northern elephant seals would occur in the proposed project area. Northern elephant seals generally feed along the continental shelf break (Le Boeuf *et al.,* 2000) and are not expected to spend time in shallow areas like the Sukkwan Strait. No sightings of elephant seals have been documented near Hydaburg; however, protected species observers (PSOs) at a DOT&PF project site in Ketchikan (located approximately 76 km east of Hydaburg) reported sightings of a northern elephant seal on multiple days (C. Gentemann, personal communication, April 8, 2022). Additional sightings of northern elephant seals around the state concurrent to the Ketchikan sighting were reported in Seward, King Cove, and Kodiak (L. Davis, personal communication, April 14, 2022). Given the recent increase in sightings, including sightings in Southeast Alaska, it is assumed that a few northern elephant seals could be present in Hydaburg during construction of the proposed project.

Harbor Porpoise

In the eastern North Pacific Ocean, the harbor porpoise ranges from Point Barrow, along the Alaska coast, and down the west coast of North America to Point Conception, California. In Alaska, harbor porpoises are currently divided into three stocks, based primarily on geography: the Bering Sea stock, the Southeast Alaska stock, and the Gulf of Alaska stock. Harbor porpoises near Hydaburg are currently recognized as members of the Southeast Alaska stock. The Southeast Alaska stock ranges from Cape Suckling to the Canada boundary (Muto *et al.,* 2022).

Harbor porpoises primarily frequent coastal waters in southeast Alaska (Dahlheim *et al.,* 2009) and occur most frequently in waters less than 100 m deep (Hobbs and Waite, 2010). Harbor porpoises forage in waters less than 200 m deep on small pelagic schooling fishes such as herring, cod, pollock, octopus, smelt, and bottom-dwelling fish, occasionally feeding on squid and crustaceans (Bjørge and Tolley, 2009; Wynne *et al.,* 2011).

Calving occurs from May to August; however, this can vary by region. Harbor porpoises are often found traveling alone, or in small groups less than 10 individuals (Schmale, 2008). According to aerial surveys of harbor porpoise abundance in southeast Alaska conducted in 1991–1993, mean group size was calculated to be 1.2 animals (Dahlheim *et al.,* 2000).

Studies of harbor porpoises reported no evidence of seasonal changes in distribution for the inland waters of southeast Alaska (Dahlheim *et al.,* 2009). Their small overall size, lack of a visible blow, low dorsal fins and overall low profile, and short surfacing time make them difficult to observe (Dahlheim *et al.,* 2015), likely reducing identification and reporting of this species, and these estimates therefore may be low.

Although there have been no systematic studies or observations of harbor porpoises specific to Hydaburg or Sukkwan Strait, there is potential for them to occur in the proposed project area. Abundance data for harbor porpoises in southeast Alaska were collected during 18 seasonal surveys spanning 22 years, from 1991 to 2012 (Dahlheim *et al.,* 2015). During that study, a total of 81 harbor porpoises were observed in the southern inland waters of southeast Alaska; however, the survey terminated 80 km southeast of Hydaburg and did not include Sukkwan Strait as part of the survey. There does not appear to be any seasonal variation in harbor porpoise density in the inland waters of southeast Alaska (Dahlheim *et al.,* 2015). Harbor porpoises have not been reported by local residents.

Dall's Porpoise

Dall's porpoises are found throughout the North Pacific, from southern Japan to southern California and north to the Bering Sea. All Dall's porpoises in Alaska are members of the Alaska stock, and those off California, Oregon, and Washington are part of a separate stock. Dall's porpoises can be found in offshore, inshore, and nearshore habitat, but they are most commonly found in waters deeper than 183 m (Dahlheim *et al.,* 2009; Jefferson, 2009).

Common prey of Dall's porpoise include a variety of small, schooling fishes (such as herrings and mackerels) and cephalopods. Dall's porpoises may migrate between inshore and offshore areas and make latitudinal movements or short seasonal migrations, but these movements are generally not consistent (Jefferson, 2009).

Dall's porpoises generally occur in groups of 2 to 20 individuals but have also been recorded in groups numbering in the hundreds. The mean group size in southeast Alaska is estimated at approximately three individuals (Dahlheim *et al.,* 2009; Jefferson, 2019). However, Dall's porpoises are reported to typically occur in groups of 10–15 animals near Ketchikan Alaska, which is located approximately 76 km east of Hydaburg, with an estimated maximum group size of 20 animals (Freitag 2017, 83 FR 37473, August 1, 2018).

No systematic studies of Dall's porpoise abundance or distribution have occurred in Sukkwan Strait; however, Dall's porpoises have been observed in Cordova Bay 30 km south of Hydaburg during a summer 2011 survey (Jefferson *et al.,* 2019). Despite generalized water depth preferences, Dall's porpoises may occur in shallow waters. Moran *et al.* (2018) recently mapped Dall's porpoise distributions in bays, shallow water, and nearshore areas of Prince William Sound, habitats not typically utilized by this species. If Dall's porpoises occur in the proposed project area, they will likely be present in March or April, given the strong seasonal patterns observed in nearby areas of southeast Alaska (Dahlheim *et al.,* 2009). No local residents have described seeing Dall's porpoises within Sukkwan Strait.

Pacific White-Sided Dolphin

Pacific white-sided dolphins are a pelagic species inhabiting temperate waters of the North Pacific Ocean and along the coasts of California, Oregon, Washington, and Alaska (Muto *et al.,* 2022). Despite their distribution mostly in deep, offshore waters, they may also be found over the continental shelf and in nearshore waters, including inland waters of southeast Alaska (Ferrero and Walker, 1996). Pacific white-sided dolphins are managed as two distinct stocks: the California/Oregon/Washington stock and the North Pacific stock (north of 45° N, including Alaska). Pacific white-sided dolphins present near the project area are recognized as being members of the North Pacific stock, which ranges from Canada into Alaska (Muto *et al.,* 2022).

Pacific white-sided dolphins prey on squid and small schooling fish such as capelin, sardines, and herring (Morton, 2006). They are known to work in groups to herd schools of fish and can dive underwater for up to 6 minutes to feed (Morton, 2006). Group sizes have been reported to range from 40 to over 1,000 animals, but groups of between 10 and 100 individuals (Stacey and Baird, 1991) occur most commonly. Seasonal movements of Pacific white-sided dolphins are not well understood, but there is evidence of both north-south seasonal movement (Leatherwood *et al.,* 1984) and inshore-offshore seasonal movement (Stacey and Baird, 1991).

Pacific white-sided dolphins do not generally occur in the shallow, inland waterways of southeast Alaska. Scientific studies and data are lacking relative to the presence or abundance of Pacific white-sided dolphins in or near Sukkwan Strait. When Pacific white-sided dolphins have been observed, sighting rates were highest in spring and decreased throughout summer and fall (Dahlheim *et al.,* 2009).

Most observations of Pacific white-sided dolphins occur off the outer coast or in inland waterways near entrances to the open ocean. According to Muto *et al.* (2022), aerial surveys in 1997 sighted one group of 164 Pacific white-sided dolphins in Dixon Entrance to the southeast of Hydaburg. These observational data, combined with anecdotal information, indicate that there is a small potential for Pacific white-sided dolphins to occur in the proposed project area. NMFS previously estimated that a group of up to 92 individuals (median between 20 and 164 individuals) could be present at Metlakatla, Alaska (86 FR 43190, August 6, 2021), which is located approximately 80 km east of Hydaburg.

Killer Whale

Killer whales have been observed in all the world's oceans, but the highest densities occur in colder and more productive waters found at high latitudes (NMFS, 2016a). Killer whales occur along the entire Alaska coast, in British Columbia and Washington inland waterways, and along the outer coasts of Washington, Oregon, and California (NMFS, 2016a).

Based on data regarding association patterns, acoustics, movements, and genetic differences, eight killer whale stocks are now recognized within the Pacific U.S. exclusive economic zone. Only individuals from the Eastern North Pacific Alaska Resident stock (Alaska Resident stock), Eastern North Pacific Northern Resident stock (Northern Resident stock), and West Coast Transient stock may occur in the proposed project area (Muto *et al.,* 2022).

There are three distinct ecotypes, or forms, of killer whales recognized: resident, transient, and offshore. The three ecotypes differ morphologically, ecologically, behaviorally, and genetically. Surveys between 1991 and 2007 encountered resident killer whales during all seasons throughout southeast Alaska. Both residents and transients were common in a variety of habitats and all major waterways, including protected bays and inlets. There does not appear to be strong seasonal variation in abundance or distribution of killer whales, but there was substantial variability between years during this study (Dahlheim e*t al.,* 2009). Spatial distribution has been shown to vary among the different ecotypes, with resident and, to a lesser extent, transient killer whales more commonly observed along the continental shelf, and offshore killer whales more commonly observed in pelagic waters (Rice *et al.,* 2021).

Transient killer whales hunt and feed primarily on marine mammals, while residents forage primarily on fish. Transient killer whales feed primarily on harbor seals, Dall's porpoises, harbor porpoises, and sea lions. Resident killer whale populations in the eastern North Pacific feed mainly on salmonids, showing a strong preference for Chinook salmon (NMFS, 2016a).

Transient killer whales are often found in long-term stable social units (pods) of 1 to 16 whales. Average pod sizes in southeast Alaska were six in spring, five in summer, and four in fall (Dahlheim *et al.,* 2009). Pod sizes of transient whales are generally smaller than those of resident social groups. Resident killer whales occur in pods ranging from 7 to 70 whales that are seen in association with one another more than 50 percent of the time (Dahlheim *et al.,* 2009; NMFS 2016b). In southeast Alaska, resident killer whale mean pod size was approximately 21.5 in spring, 32.3 in summer, and 19.3 in fall (Dahlheim *et al.,* 2009).

No systematic studies of killer whales have been conducted in or around Sukkwan Strait. Dahlheim *et al.* (2009) observed transient killer whales within Lynn Canal, Icy Strait, Stephens Passage, Frederick Sound, and upper Chatham Strait. Anecdotal local information suggests that killer whales are rarely seen near the Hydaburg area, but a pod may be seen occasionally every few months.

Humpback Whale

Humpback whales are found throughout southeast Alaska in a variety of marine environments, including open ocean, nearshore waters, and areas with strong tidal currents (Dahlheim *et al.,* 2009). Most humpback whales are migratory and spend winters in the breeding grounds off either Hawaii or Mexico. Humpback whales generally arrive in southeast Alaska in March and return to their wintering grounds in November. Some humpback whales depart late or arrive early to feeding grounds, and therefore the species occurs in southeast Alaska year-round (Straley, 1990; Straley *et al.,* 2018). Current threats to humpback whales include vessel strikes, spills, climate change, and commercial fishing operations (Muto *et al.,* 2022).

Humpback whales worldwide were designated as ''endangered'' under the Endangered Species Conservation Act in 1970 and had been listed as a species under the ESA since its inception in 1973. On September 8, 2016, NMFS published a final decision that changed the status of humpback whales under the ESA (81 FR 62259), effective on October 11, 2016. The decision recognized the existence of 14 DPSs based on distinct breeding areas in tropical and temperate waters. Five of the 14 DPSs were classified under the ESA (4 endangered and 1 threatened), while the other 9 DPSs were delisted. Humpback whales found in the project area are predominantly members of the Hawaii DPS, which is not listed under the ESA. However, based on a comprehensive photo-identification study, members of the Mexico DPS, which is listed as threatened, are known to occur in southeast Alaska. Members of different DPSs are known to intermix on feeding grounds; therefore, all waters off the coast of Alaska should be considered to potentially have ESA-listed humpback whales. Approximately 2 percent of all humpback whales encountered in southeast Alaska and northern British Columbia are expected to be members of the Mexico DPS, while all others are expected to be members of the Hawaii DPS (Wade *et al.,* 2021).

The DPSs of humpback whales that were identified through the ESA listing process do not necessarily equate to the existing MMPA stocks. The stock delineations of humpback whales under the MMPA are currently under review. Until this review is complete, NMFS considers humpback whales in southeast Alaska to be part of the Central North Pacific stock, with a status of endangered under the ESA and designations of strategic and depleted under the MMPA (Muto *et al.,* 2022).

Southeast Alaska is considered a biologically important area (BIA) for feeding humpback whales between May and September (Wild *et al.,* 2023), though not currently designated as critical habitat (86 FR 21082, April 21, 2021). Most humpback whales migrate to other regions during winter to breed, but over-wintering (non-breeding) humpback whales have been noted and may be increasingly common and attributable to staggered migration (Straley, 1990, Straley *et al.,* 2018). It is thought that those humpbacks that remain in southeast Alaska do so in response to the availability of winter schools of fish prey, which primarily includes overwintering herring (Straley *et al.,* 2018). In Alaska, humpback whales filter feed on tiny crustaceans, plankton, and small fish such as walleye pollock, Pacific sand lance, herring (*Clupea pallasii*), eulachon (*Thaleichthys pacificus*), and capelin (Witteveen *et al.,* 2012). It is common to observe groups of humpback whales cooperatively bubble feeding. Group sizes in southeast Alaska generally range from one to four individuals (Dahlheim *et al.,* 2009).

No systematic studies have documented humpback whale abundance near Hydaburg. Anecdotal information from local residents suggests that humpback whales' utilization of the area is intermittent year-round. Their abundance, distribution, and occurrence are dependent on and fluctuate with fish prey. Local residents estimate that one to two humpback whales may be present in the Sukkwan Strait on a weekly basis. Elsewhere in southeast Alaska, marine mammal monitoring for projects in Tongass Narrows, Ketchikan, Alaska, indicate that humpback whales are present in that area most regularly from May through October (DOT&PF, 2021; 2022) and may occur in lower numbers in winter, which we would expect to be the case for Hydaburg.

Minke Whale

Minke whales are found throughout the northern hemisphere in polar, temperate, and tropical waters (Jefferson *et al.,* 2008). The population status of minke whales is considered stable throughout most of their range. Historically, commercial whaling reduced the population size of this species, but given their small size, they were never a primary target of whaling and did not experience severe population declines as did larger cetaceans.

The International Whaling Commission has identified three minke whale stocks in the North Pacific: one near the Sea of Japan, a second in the rest of the western Pacific, and a third, less concentrated, stock throughout the eastern Pacific. NMFS further splits this third stock between Alaska whales and resident whales of California, Oregon, and Washington (Muto *et al.,* 2022). Minke whales in southeast Alaska are part of the Alaska stock (Muto *et al.,* 2022). Minke whales are found in all Alaskan waters. There are no population estimates for minke whales in southeast Alaska. Surveys in southeast Alaska have consistently identified individuals throughout inland waters in low numbers (Dahlheim *et al.,* 2009).

In Alaska, the minke whale diet consists primarily of euphausiids and walleye pollock. Minke whales are generally found in shallow, coastal waters within 200 m of shore (Zerbini *et al.,* 2006) and are almost always solitary or in small groups of two to three. Rarely, loose aggregations of up to 400 animals have been associated with feeding areas in Arctic latitudes. In Alaska, seasonal movements are associated with feeding areas that are generally located at the edge of the pack ice (NMFS, 2014).

There are no known occurrences of minke whales within the project area. Dedicated surveys for cetaceans in southeast Alaska found that minke whales were scattered throughout inland waters from Glacier Bay and Icy Strait to Clarence Strait, with small concentrations near the entrance of Glacier Bay (Dahlheim *et al.,* 2009). All sightings were of single minke whales, except for a single sighting of multiple minke whales. Surveys took place in spring, summer, and fall, and minke whales were present in low numbers in all seasons and years. NMFS is not aware of information on the winter occurrence of minke whales in southeast Alaska.

Anecdotal observations suggest that minke whales are not seen near Hydaburg and so are expected to occur rarely in the project area. However, NMFS has previously estimated that a group of up to three individuals could be present at nearby Metlakatla, Alaska over 4 months (86 FR 43190, August 6, 2021). Since their ranges extend into the project area and they have been observed in southeast Alaska, including in Clarence Strait (Dahlheim *et al.,* 2009), it is possible the species could occur near the project area.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Not all marine mammal species have equal hearing capabilities or hear over the same frequency range (*e.g.,* Richardson *et al.,* 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007, 2019) recommended that marine mammals be divided into hearing groups based on directly measured (behavioral or auditory evoked potential techniques) or estimated hearing ranges (behavioral response data, anatomical modeling, *etc.*). Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.,* low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 3.

TABLE 3—MARINE MAMMAL HEARING GROUPS

[NMFS, 2018]

Hearing group	Generalized hearing range *
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz.
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz.
High-frequency (HF) cetaceans (true porpoises, *Kogia,* river dolphins, Cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*).	275 Hz to 160 kHz.
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz.
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz.

* Represents the generalized hearing range for the entire group as a composite (*i.e.,* all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al.,* 2007) and PW pinniped (approximation).

The pinniped hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.,* 2006; Kastelein *et al.,* 2009; Reichmuth *et al.,* 2013).

For more detail concerning these groups and associated generalized hearing ranges, please see NMFS (2018) for a review of available information.

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

This section provides a discussion of the ways in which components of the specified activity may impact marine mammals and their habitat. The Estimated Take section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by this activity. The Negligible Impact Analysis and Determination section considers the content of this section, the Estimated Take section, and the Proposed Mitigation section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and whether those impacts are reasonably expected to, or reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

Acoustic effects on marine mammals during the specified activity are expected to potentially occur from impact pile installation, vibratory pile installation, and DTH systems. The effects of underwater noise from the DOT&PF's proposed activities have the potential to result in Level B harassment of marine mammals in the action area, and, for some species as a result of certain activities, Level A harassment

Background on Sound

This section contains a brief technical background on sound, on the characteristics of certain sound types, and on metrics used in this proposal in as much as the information is relevant to the specified activity and to a discussion of the potential effects of the specified activity on marine mammals found later in this document. For general information on sound and its interaction with the marine environment, please see, *e.g.,* Erbe and Thomas (2022); Au and Hastings (2008); Richardson *et al.* (1995); Urick (1983) as well as the Discovery of Sound in the Sea (DOSITS) website at *https://dosits.org/.*

Sound is a vibration that travels as an acoustic wave through a medium such as a gas, liquid, or solid. Sound waves alternately compress and decompress the medium as the wave travels. In water, sound waves radiate in a manner similar to ripples on the surface of a pond and may be either directed in a beam (narrow beam or directional sources) or sound may radiate in all directions (omnidirectional sources), as is the case for sound produced by the construction activities considered here. The compressions and decompressions associated with sound waves are detected as changes in pressure by marine mammals and human-made sound receptors such as hydrophones.

Sound travels more efficiently in water than almost any other form of energy, making the use of sound as a primary sensory modality ideal for inhabitants of the aquatic environment. In seawater, sound travels at roughly 1,500 meters per second (m/s). In air, sound waves travel much more slowly at about 340 m/s. However, the speed of sound in water can vary by a small amount based on characteristics such as temperature and salinity.

The basic characteristics of a sound wave are frequency, wavelength, velocity, and amplitude. Frequency is the number of pressure waves that pass by a reference point per unit of time and is measured in hertz (Hz) or cycles per second. Wavelength is the distance between two peaks or corresponding points of a sound wave (length of one cycle). Higher frequency sounds have shorter wavelengths than lower frequency sounds, and typically attenuate (decrease) more rapidly with distance, except in certain cases in shallower water. The amplitude of a sound pressure wave is related to the subjective ''loudness'' of a sound and is typically expressed in dB, which are a relative unit of measurement that is used to express the ratio of one value of a power or pressure to another. A sound pressure level (SPL) in dB is described as the ratio between a measured pressure and a reference pressure, and is a logarithmic unit that accounts for large variations in amplitude; therefore, a relatively small change in dB corresponds to large changes in sound pressure. For example, a 10-dB increase is a 10-fold increase in acoustic power. A 20-dB increase is then a 100-fold increase in power and a 30-dB increase is a 1,000-fold increase in power. However, a 10-fold increase in acoustic power does not mean that the sound is perceived as being 10 times louder. The dB is a relative unit comparing two pressures; therefore, a reference pressure must always be indicated. For underwater sound, this is 1 micropascal (μPa). For in-air sound, the reference pressure is 20 micropascal (μPa). The amplitude of a sound can be presented in various ways; however, NMFS typically considers three metrics: sound exposure level (SEL), root-mean-square (RMS) SPL, and peak SPL (defined below). The source level represents the SPL referenced from a standard distance from the source (typically 1 m) (Richardson *et al.,* 1995; American National Standards Institute (ANSI), 2013), while the received level is the SPL at the receiver's position. For pile driving activities, the SPL is typically referenced at 10 m.

SEL (represented as dB referenced to 1 micropascal squared per second (re 1 μPa^2-s)) represents the total energy in a stated frequency band over a stated time interval or event, and considers both intensity and duration of exposure. The per-pulse SEL (*e.g.,* single strike or single shot SEL) is calculated over the time window containing the entire pulse (*i.e.,* 100 percent of the acoustic energy). SEL can also be a cumulative metric; it can be accumulated over a single pulse (for pile driving this is the same as single-strike SEL, above; SELss), or calculated over periods containing multiple pulses (SELcum). Cumulative SEL (SELcum) represents the total energy accumulated by a receiver over a defined time window or during an event. The SEL metric is useful because it allows sound exposures of different durations to be related to one another in terms of total acoustic energy. The duration of a sound event and the number of pulses, however, should be specified as there is no accepted standard duration over which the summation of energy is measured.

RMS SPL is 10 times the logarithm (base 10) of the ratio of the mean-square sound pressure to the specified reference value, in dB (ISO, 2017). RMS is calculated by squaring all of the sound amplitudes, averaging the squares, and then taking the square root of the average (Urick, 1983). RMS accounts for both positive and negative values; squaring the pressures makes all values positive so that they may be accounted for in the summation of pressure levels (Hastings and Popper, 2005). This measurement is often used in the context of discussing behavioral effects, in part because behavioral effects, which often result from auditory cues, may be better expressed through averaged units than by peak SPL. For impulsive sounds, RMS is calculated by the portion of the waveform containing 90 percent of the sound energy from the impulsive event (Madsen, 2005).

Peak SPL (also referred to as zero-to-peak sound pressure or 0-pk) is the maximum instantaneous sound pressure measurable in the water, which can arise from a positive or negative sound pressure, during a specified time, for a specific frequency range (International Organization for Standardization (ISO), 2017) at a specified distance from the source, and is represented in the same units as the RMS sound pressure. Along with SEL, this metric is used in evaluating the potential for PTS (permanent threshold shift) and TTS (temporary threshold shift) associated with impulsive sound sources.

Sounds are also characterized by their temporal component. Continuous sounds are those whose sound pressure level remains above that of the ambient or background sound with negligibly small fluctuations in level (ANSI, 2005), while intermittent sounds are defined as sounds with interrupted levels of low or no sound (National Institute for Occupational Safety and Health (NIOSH), 1998). A key distinction between continuous and intermittent sound sources is that intermittent sounds have a more regular (predictable) pattern of bursts of sounds and silent periods (*i.e.,* duty cycle), which continuous sounds do not.

Sounds can be either impulsive or non-impulsive (defined below). The distinction between these two sound types is important because they have differing potential to cause physical effects, particularly with regard to noise-induced hearing loss (*e.g.,* Ward, 1997 in Southall *et al.,* 2007). Please see NMFS *et al.* (2018) and Southall *et al.* (2007, 2019) for an in-depth discussion of these concepts.

Impulsive sound sources (*e.g.,* explosions, gunshots, sonic booms, seismic airgun shots, impact pile driving) produce signals that are brief (typically considered to be less than one second), broadband, atonal transients (ANSI, 1986; NIOSH, 1998; ANSI 2005) and occur either as isolated events or repeated in some succession. Impulsive sounds are all characterized by a relatively rapid rise from ambient pressure to a maximal pressure value followed by a rapid decay period that may include a period of diminishing, oscillating maximal and minimal pressures, and generally have an increased capacity to induce physical injury as compared with sounds that lack these features. Impulsive sounds are intermittent in nature. The duration of such sounds, as received at a distance, can be greatly extended in a highly reverberant environment.

Non-impulsive sounds can be tonal, narrowband, or broadband, brief or prolonged, and may be either continuous or non-continuous (ANSI, 1995; NIOSH, 1998). Some of these non-impulsive sounds can be transient signals of short duration but without the essential properties of impulses (*e.g.,* rapid rise time). Examples of non-impulsive sounds include those produced by vessels, aircraft, machinery operations such as drilling or dredging, vibratory pile driving, and active sonar systems.

Even in the absence of sound from the specified activity, the underwater environment is typically loud due to both natural and anthropogenic sound sources. Ambient sound is defined as a composite of naturally-occurring (*i.e.,* non-anthropogenic) sound from many sources both near and far (ANSI, 1995). Background sound is similar, but includes all sounds, including anthropogenic sounds, minus the sounds produced by the proposed activity (NMFS, 2012; NOAA, 2016b). The sound level of a region is defined by the total acoustical energy being generated by known and unknown sources. These sources may include physical (*e.g.,* wind and waves, earthquakes, ice, atmospheric sound), biological (*e.g.,* sounds produced by marine mammals, fish, and invertebrates), and anthropogenic (*e.g.,* vessels, dredging, construction) sound. A number of sources contribute to background and ambient sound, including wind and waves, which are a main source of naturally occurring ambient sound for frequencies between 200 Hz and 50 kilohertz (kHz) (Mitson, 1995). In general, background and ambient sound levels tend to increase with increasing wind speed and wave height. Precipitation can become an important component of total sound at frequencies above 500 Hz, and possibly down to 100 Hz during quiet times. Marine mammals can contribute significantly to background and ambient sound levels, as can some fish and snapping shrimp. The frequency band for biological contributions is from approximately 12 Hz to over 100 kHz. Sources of background sound related to human activity include transportation (surface vessels), dredging and construction, oil and gas drilling and production, geophysical surveys, sonar, and explosions. Vessel noise typically dominates the total background sound for frequencies between 20 and 300 Hz.

In general, the frequencies of many anthropogenic sounds, particularly those produced by construction activities, are below 1 kHz (Richardson et al. 1995). When sounds at frequencies greater than 1 kHz are produced, they generally attenuate relatively rapidly, particularly above 20 kHz due to propagation losses and absorption (Urick, 1983).

Transmission loss (TL) defines the degree to which underwater sound has spread in space and lost energy after having moved through the environment, and reached a receiver. It is defined by the ISO as the reduction in a specified level between two specified points that are within an underwater acoustic field (ISO 2017). Careful consideration of transmission loss and appropriate propagation modeling is a crucial step in determining the impacts of underwater sound, as it helps to define the ranges (isopleths) to which impacts are expected and depends significantly on local environmental parameters such as seabed type, water depth (bathymetry), and the local speed of sound. Geometric spreading laws are powerful tools which provide a simple means of estimating TL, based on the shape of the sound wave front in the water column. For a sound source that is equally loud in all directions and in deep water, the sound field takes the form of a sphere, as the sound extends in every direction uniformly. In this case, the intensity of the sound is spread across the surface of the sphere, and thus we can relate intensity loss to the square of the range (as area = $4*pi*r^2$). When expressing logarithmically in dB as TL, we find that TL = $20*Log_{10}$(range), for the case of spherical spreading. In shallow water, the sea surface and seafloor will bound the shape of the sound, leading to a more cylindrical shape, as the top and bottom of the sphere is truncated by the largely reflective boundaries. This situation is termed cylindrical spreading, and is given by TL = $10*Log_{10}$(range) (Urick, 1983). An intermediate scenario may be defined by the equation TL = $15*Log_{10}$(range), and is referred to as practical spreading. Though these two geometric spreading laws defined above do not capture many often important details (scattering, absorption, *etc.*), they offer a reasonable and simple approximation of how sound decreases in intensity as it is transmitted. In the absence of measured data indicating the level of transmission loss at a given site for a specific activity, NMFS recommends practical spreading (*i.e.,* $15*Log_{10}$(range)) to model acoustic propagation for construction activities in most nearshore environments.

The sum of the various natural and anthropogenic sound sources at any given location and time depends not only on the source levels but also on the propagation of sound through the environment. Sound propagation is dependent on the spatially and temporally varying properties of the water column and sea floor, and is frequency-dependent. As a result of the dependence on a large number of varying factors, background and ambient sound levels can be expected to vary widely over both coarse and fine spatial and temporal scales. Sound levels at a given frequency and location can vary by 10–20 dB from day to day (Richardson et al., 1995). The result is that, depending on the source type and its intensity, sound from the specified activity may be a negligible addition to the local environment or could form a distinctive signal that may affect marine mammals.

Ongoing marine vessel traffic, seaplane traffic and associated activities throughout the Sukkwan Strait area, as well as land-based industrial and commercial activities, result in elevated in-air and underwater sound conditions in the project area that increase with proximity to the project site. Sound levels likely vary seasonally, with elevated levels during summer, when the commercial and fishing industries are at their peaks.

Description of Sound Sources for the Specified Activities

In-water construction activities associated with the project would include impact pile installation, vibratory pile installation and removal, and DTH installation. Impact hammers operate by repeatedly dropping and/or pushing a heavy piston onto a pile to drive the pile into the substrate. Sound generated by impact hammers is characterized by rapid rise times and high peak levels, a potentially injurious combination (Hastings and Popper, 2005). Vibratory hammers install piles by vibrating them and allowing the weight of the hammer to push them into the sediment. Vibratory hammers typically produce less sound (*i.e.,* lower levels) than impact hammers. Peak SPLs may be 180 dB or greater, but are generally 10 to 20 dB lower than SPLs generated during impact pile driving of the same-sized pile (Oestman *et al.,* 2009). The rise time is slower, reducing the probability and severity of injury, and the sound energy is distributed over a greater amount of time (Nedwell and Edwards, 2002; Carlson *et al.,* 2005).

DTH systems would also be used during the proposed construction to install rock sockets and tension anchors. A DTH hammer is essentially a drill bit that drills through the bedrock using a rotating function like a normal drill, in concert with a hammering mechanism operated by a pneumatic (or sometimes hydraulic) component integrated into the DTH hammer to increase speed of progress through the substrate (*i.e.,* it is similar to a ''hammer drill'' hand tool). The sounds produced by the DTH methods contain both a continuous non-impulsive component from the drilling action and an impulsive component from the hammering effect. Therefore, NMFS treats DTH systems as both impulsive and continuous, non-impulsive sound source types simultaneously.

The likely or possible impacts of the DOT&PF's proposed activities on marine mammals could involve both non-acoustic and acoustic stressors. Potential non-acoustic stressors could result from the physical presence of the equipment and personnel; however, given there are no known pinniped haul-out sites in the vicinity of the proposed project site, visual and other non-acoustic stressors would be limited, and any impacts to marine mammals are expected to primarily be acoustic in nature.

Acoustic Impacts

The introduction of anthropogenic noise into the aquatic environment from pile driving or drilling is the primary means by which marine mammals may be harassed from the DOT&PF's specified activity. In general, animals exposed to natural or anthropogenic sound may experience physical and psychological effects, ranging in magnitude from none to severe (Southall *et al.,* 2007, 2019). In general, exposure to pile driving or drilling noise has the potential to result in auditory threshold shifts and behavioral reactions (*e.g.,* avoidance, temporary cessation of foraging and vocalizing, changes in dive behavior). Exposure to anthropogenic noise can also lead to non-observable physiological responses, such an increase in stress hormones. Additional noise in a marine mammal's habitat can mask acoustic cues used by marine mammals to carry out daily functions, such as communication and predator and prey detection. The effects of pile driving or drilling noise on marine mammals are dependent on several factors, including, but not limited to, sound type (*e.g.,* impulsive vs. non-impulsive), the species, age and sex class (*e.g.,* adult male vs. mom with calf), duration of exposure, the distance between the pile and the animal, received levels, behavior at time of exposure, and previous history with exposure (Wartzok *et al.,* 2004; Southall *et al.,* 2007). Here we discuss physical auditory effects (threshold shifts) followed by behavioral effects and potential impacts on habitat.

NMFS defines a noise-induced threshold shift (TS) as a change, usually an increase, in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). The amount of threshold shift is customarily expressed in dB. A TS can be permanent or temporary. As described in NMFS (2018a), there are numerous factors to consider when examining the consequence of TS, including, but not limited to, the signal temporal pattern (*e.g.,* impulsive or non-impulsive), likelihood an individual would be exposed for a long enough duration or to a high enough level to induce a TS, the magnitude of the TS, time to recovery (seconds to minutes or hours to days), the frequency range of the exposure (*i.e.,* spectral content), the hearing and vocalization frequency range of the exposed species relative to the signal's frequency spectrum (*i.e.,* how animal uses sound within the frequency band of the signal; *e.g.,* Kastelein *et al.,* 2014), and the overlap between the animal and the source (*e.g.,* spatial, temporal, and spectral). When considering auditory effects for the DOT&PF's proposed activities, vibratory pile driving is considered a non-impulsive source, while impact pile driving is treated as an impulsive source. DTH systems are considered to have both non-impulsive and impulsive components.

Permanent Threshold Shift (PTS)—NMFS defines PTS as a permanent, irreversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). PTS does not generally affect more than a limited frequency range, and an animal that has incurred PTS has incurred some level of hearing loss at the relevant frequencies; typically animals with PTS are not functionally deaf (Richardson *et al.,* 1995; Au and Hastings, 2008). Available data from humans and other terrestrial mammals indicate that a 40 dB threshold shift approximates PTS onset (see Ward *et al.,* 1958, 1959; Ward, 1960; Kryter *et al.,* 1966; Miller, 1974; Ahroon *et al.,* 1996; Henderson *et al.,* 2008). PTS criteria for marine mammals are estimates, as with the exception of a single study unintentionally inducing PTS in a harbor seal (Kastak *et al.,* 2008), there are no empirical data measuring PTS in marine mammals largely due to the fact that, for various ethical reasons, experiments involving anthropogenic noise exposure at levels inducing PTS are not typically pursued or authorized (NMFS, 2018).

Temporary Threshold Shift (TTS)—A temporary, reversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (NMFS, 2018). Based on data from cetacean TTS measurements (see Southall *et al.,* 2007; 2019), a TTS of 6 dB is considered the minimum threshold shift clearly larger than any day-to-day or session-to-session variation in a subject's normal hearing ability (Schlundt *et al.,* 2000; Finneran *et al.,* 2000, 2002). As described in Finneran (2015), marine mammal studies have shown the amount of TTS increases with SELcum in an accelerating fashion: at low exposures with lower SELcum, the amount of TTS is typically small and the growth curves have shallow slopes. At exposures with higher SELcum, the growth curves become steeper and approach linear relationships with the noise SEL.

Depending on the degree (elevation of threshold in dB), duration (*i.e.,* recovery time), and frequency range of TTS, and the context in which it is experienced, TTS can have effects on marine mammals ranging from discountable to serious (similar to those discussed in auditory masking, below). For example, a marine mammal may be able to readily compensate for a brief, relatively small amount of TTS in a non-critical frequency range that takes place during a time when the animal is traveling through the open ocean, where ambient noise is lower and there are not as many competing sounds present. Alternatively, a larger amount and longer duration of TTS sustained during time when communication is critical for successful mother/calf interactions could have more serious impacts. We note that reduced hearing sensitivity as a simple function of aging has been observed in marine mammals, as well as humans and other taxa (Southall *et al.,* 2007), so we can infer that strategies exist for coping with this condition to some degree, though likely not without cost.

Many studies have examined noise-induced hearing loss in marine mammals (see Finneran (2015) and Southall *et al.* (2019) for summaries). TTS is the mildest form of hearing impairment that can occur during exposure to sound (Kryter, 2013). While experiencing TTS, the hearing threshold rises, and a sound must be at a higher level in order to be heard. In terrestrial and marine mammals, TTS can last from minutes or hours to days (in cases of strong TTS). In many cases, hearing sensitivity recovers rapidly after exposure to the sound ends. For cetaceans, published data on the onset of TTS are limited to captive bottlenose dolphin (*Tursiops truncatus*), beluga whale (*Delphinapterus leucas*), harbor porpoise, and Yangtze finless porpoise (*Neophocoena asiaeorientalis*) (Southall *et al.,* 2019). For pinnipeds in water, measurements of TTS are limited to harbor seals, elephant seals, bearded seals (*Erignathus barbatus*), and California sea lions (*Zalophus californianus*) (Kastak *et al.,* 1999; 2007; Kastelein *et al.,* 2019b; 2019c; Reichmuth *et al.,* 2019; Sills *et al.,* 2020; Kastelein *et al.,* 2021; 2022a; 2022b). These studies examine hearing thresholds measured in marine mammals before and after exposure to intense or long-duration sound exposures. The difference between the pre-exposure and post-exposure thresholds can be used to determine the amount of threshold shift at various post-exposure times.

The amount and onset of TTS depends on the exposure frequency. Sounds at low frequencies, well below the region of best sensitivity for a species or hearing group, are less hazardous than those at higher frequencies, near the region of best sensitivity (Finneran and Schlundt, 2013). At low frequencies, onset-TTS exposure levels are higher compared to those in the region of best sensitivity (*i.e.,* a low frequency noise would need to be louder to cause TTS onset when TTS exposure level is higher), as shown for harbor porpoises and harbor seals (Kastelein *et al.,* 2019a; Kastelein *et al.,* 2019c). Note that in general, harbor seals and harbor porpoises have a lower TTS onset than other measured pinniped or cetacean species (Finneran, 2015). In addition, TTS can accumulate across multiple exposures, but the resulting TTS will be less than the TTS from a single, continuous exposure with the same SEL (Mooney *et al.,* 2009; Finneran *et al.,* 2010; Kastelein *et al.,* 2014; 2015). This means that TTS predictions based on the total, cumulative SEL will overestimate the amount of TTS from intermittent exposures, such as sonars and impulsive sources. Nachtigall *et al.* (2018) describe measurements of hearing sensitivity of multiple odontocete species (bottlenose dolphin, harbor porpoise, beluga, and false killer whale (*Pseudorca* *crassidens*)) when a relatively loud sound was preceded by a warning sound. These captive animals were shown to reduce hearing sensitivity when warned of an impending intense sound. Based on these experimental observations of captive animals, the authors suggest that wild animals may dampen their hearing during prolonged exposures or if conditioned to anticipate intense sounds. Another study showed that echolocating animals (including odontocetes) might have anatomical specializations that might allow for conditioned hearing reduction and filtering of low-frequency ambient noise, including increased stiffness and control of middle ear structures and placement of inner ear structures (Ketten *et al.,* 2021). Data available on noise-induced hearing loss for mysticetes are currently lacking (NMFS, 2018). Additionally, the existing marine mammal TTS data come from a limited number of individuals within these species.

Relationships between TTS and PTS thresholds have not been studied in marine mammals, and there is no PTS data for cetaceans, but such relationships are assumed to be similar to those in humans and other terrestrial mammals. PTS typically occurs at exposure levels at least several decibels above (a 40-dB threshold shift approximates PTS onset; *e.g.,* Kryter *et al.,* 1966; Miller, 1974) that inducing mild TTS (a 6-dB threshold shift approximates TTS onset; *e.g.,* Southall *et al.,* 2007). Based on data from terrestrial mammals, a precautionary assumption is that the PTS thresholds for impulsive sounds (such as impact pile driving pulses as received close to the source) are at least 6 dB higher than the TTS threshold on a peak-pressure basis and PTS cumulative sound exposure level thresholds are 15 to 20 dB higher than TTS cumulative sound exposure level thresholds (Southall *et al.,* 2007). Given the higher level of sound or longer exposure duration necessary to cause PTS as compared with TTS, it is considerably less likely that PTS could occur.

Behavioral Harassment—Exposure to noise from pile driving and drilling also has the potential to behaviorally disturb marine mammals to a level that rises to the definition of harassment under the MMPA. Generally speaking, NMFS considers a behavioral disturbance that rises to the level of harassment under the MMPA a non-minor response—in other words, not every response qualifies as behavioral disturbance, and for responses that do, those of a higher level, or accrued across a longer duration, have the potential to affect foraging, reproduction, or survival. Behavioral disturbance may include a variety of effects, including subtle changes in behavior (*e.g.,* minor or brief avoidance of an area or changes in vocalizations), more conspicuous changes in similar behavioral activities, and more sustained and/or potentially severe reactions, such as displacement from or abandonment of high-quality habitat. Disturbance may result in changing durations of surfacing and dives, changing direction and/or speed; reducing/increasing vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); eliciting a visible startle response or aggressive behavior (such as tail/fin slapping or jaw clapping); avoidance of areas where sound sources are located. Pinnipeds may increase their haul out time, possibly to avoid in-water disturbance (Thorson and Reyff, 2006). Behavioral responses to sound are highly variable and context-specific and any reactions depend on numerous intrinsic and extrinsic factors (*e.g.,* species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day), as well as the interplay between factors (*e.g.,* Richardson *et al.,* 1995; Wartzok *et al.,* 2004; Southall *et al.,* 2007; Weilgart, 2007; Archer *et al.,* 2010, Southall *et al.,* 2021). Behavioral reactions can vary not only among individuals but also within an individual, depending on previous experience with a sound source, context, and numerous other factors (Ellison *et al.,* 2012), and can vary depending on characteristics associated with the sound source (*e.g.,* whether it is moving or stationary, number of sources, distance from the source). In general, pinnipeds seem more tolerant of, or at least habituate more quickly to, potentially disturbing underwater sound than do cetaceans, and generally seem to be less responsive to exposure to industrial sound than most cetaceans. Please see Appendices B and C of Southall *et al.* (2007) and Gomez *et al.* (2016) for reviews of studies involving marine mammal behavioral responses to sound.

Habituation can occur when an animal's response to a stimulus wanes with repeated exposure, usually in the absence of unpleasant associated events (Wartzok *et al.,* 2004). Animals are most likely to habituate to sounds that are predictable and unvarying. It is important to note that habituation is appropriately considered as a ''progressive reduction in response to stimuli that are perceived as neither aversive nor beneficial,'' rather than as, more generally, moderation in response to human disturbance (Bejder *et al.,* 2009). The opposite process is sensitization, when an unpleasant experience leads to subsequent responses, often in the form of avoidance, at a lower level of exposure.

As noted above, behavioral state may affect the type of response. For example, animals that are resting may show greater behavioral change in response to disturbing sound levels than animals that are highly motivated to remain in an area for feeding (Richardson *et al.,* 1995; National Research Council (NRC), 2003; Wartzok *et al.,* 2004). Controlled experiments with captive marine mammals have showed pronounced behavioral reactions, including avoidance of loud sound sources (Ridgway *et al.,* 1997; Finneran *et al.,* 2003). Observed responses of wild marine mammals to loud pulsed sound sources (typically seismic airguns or acoustic harassment devices) have been varied but often consist of avoidance behavior or other behavioral changes suggesting discomfort (Morton and Symonds, 2002; see also Richardson *et al.,* 1995; Nowacek *et al.,* 2007).

Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal. If a marine mammal does react briefly to an underwater sound by changing its behavior or moving a small distance, the impacts of the change are unlikely to be significant to the individual, let alone the stock or population. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on individuals and populations could be significant (*e.g.,* Lusseau and Bejder, 2007; Weilgart, 2007; NRC, 2005). However, there are broad categories of potential response, which we describe in greater detail here, that include alteration of dive behavior, alteration of foraging behavior, effects to breathing, interference with or alteration of vocalization, avoidance, and flight.

Changes in dive behavior can vary widely and may consist of increased or decreased dive times and surface intervals as well as changes in the rates of ascent and descent during a dive (*e.g.,* Frankel and Clark, 2000; Costa *et al.,* 2003; Ng and Leung, 2003; Nowacek *et al.,* 2004; Goldbogen *et al.,* 2013a,b). Variations in dive behavior may reflect interruptions in biologically significant activities (*e.g.,* foraging) or they may be of little biological significance. The impact of an alteration to dive behavior resulting from an acoustic exposure depends on what the animal is doing at the time of the exposure and the type and magnitude of the response.

Disruption of feeding behavior can be difficult to correlate with anthropogenic sound exposure, so it is usually inferred by observed displacement from known foraging areas, the appearance of secondary indicators (*e.g.,* bubble nets or sediment plumes), or changes in dive behavior. As for other types of behavioral response, the frequency, duration, and temporal pattern of signal presentation, as well as differences in species sensitivity, are likely contributing factors to differences in response in any given circumstance (*e.g.,* Croll *et al.,* 2001; Nowacek *et al.,* 2004; Madsen *et al.,* 2006; Yazvenko *et al.,* 2007). A determination of whether foraging disruptions incur fitness consequences would require information on or estimates of the energetic requirements of the affected individuals and the relationship between prey availability, foraging effort and success, and the life history stage of the animal.

Variations in respiration naturally vary with different behaviors and alterations to breathing rate as a function of acoustic exposure can be expected to co-occur with other behavioral reactions, such as a flight response or an alteration in diving. However, respiration rates in and of themselves may be representative of annoyance or an acute stress response. Various studies have shown that respiration rates may either be unaffected or could increase, depending on the species and signal characteristics, again highlighting the importance in understanding species differences in the tolerance of underwater noise when determining the potential for impacts resulting from anthropogenic sound exposure (*e.g.,* Kastelein *et al.,* 2001, 2005, 2006; Gailey *et al.,* 2007).

Marine mammals vocalize for different purposes and across multiple modes, such as whistling, echolocation click production, calling, and singing. Changes in vocalization behavior in response to anthropogenic noise can occur for any of these modes and may result from a need to compete with an increase in background noise or may reflect increased vigilance or a startle response. For example, in the presence of potentially masking signals, humpback whales and killer whales have been observed to increase the length of their songs or vocalizations, respectively (Miller *et al.,* 2000; Fristrup *et al.,* 2003; Foote *et al.,* 2004), while right whales (*Eubalaena glacialis*) have been observed to shift the frequency content of their calls upward while reducing the rate of calling in areas of increased anthropogenic noise (Parks *et al.,* 2007). In some cases, animals may cease sound production during production of aversive signals (Bowles *et al.,* 1994).

Avoidance is the displacement of an individual from an area or migration path as a result of the presence of a sound or other stressors, and is one of the most obvious manifestations of disturbance in marine mammals (Richardson *et al.,* 1995). For example, gray whales are known to change direction—deflecting from customary migratory paths—in order to avoid noise from seismic surveys (Malme *et al.,* 1984). Avoidance may be short-term, with animals returning to the area once the noise has ceased (*e.g.,* Bowles *et al.,* 1994; Goold, 1996; Stone *et al.,* 2000; Morton and Symonds, 2002; Gailey *et al.,* 2007). Longer-term displacement is possible, however, which may lead to changes in abundance or distribution patterns of the affected species in the affected region if habituation to the presence of the sound does not occur (*e.g.,* Blackwell *et al.,* 2004; Bejder *et al.,* 2006; Teilmann *et al.,* 2006).

A flight response is a dramatic change in normal movement to a directed and rapid movement away from the perceived location of a sound source. The flight response differs from other avoidance responses in the intensity of the response (*e.g.,* directed movement, rate of travel). Relatively little information on flight responses of marine mammals to anthropogenic signals exist, although observations of flight responses to the presence of predators have occurred (Connor and Heithaus, 1996, Bowers *et al.,* 2018). The result of a flight response could range from brief, temporary exertion and displacement from the area where the signal provokes flight to, in extreme cases, marine mammal strandings (England, 2001). However, it should be noted that response to a perceived predator does not necessarily invoke flight (Ford and Reeves, 2008), and whether individuals are solitary or in groups may influence the response.

Behavioral disturbance can also impact marine mammals in more subtle ways. Increased vigilance may result in costs related to diversion of focus and attention (*i.e.,* when a response consists of increased vigilance, it may come at the cost of decreased attention to other critical behaviors such as foraging or resting). These effects have generally not been demonstrated for marine mammals, but studies involving fishes and terrestrial animals have shown that increased vigilance may substantially reduce feeding rates (*e.g.,* Beauchamp and Livoreil, 1997; Fritz *et al.,* 2002; Purser and Radford, 2011). In addition, chronic disturbance can cause population declines through reduction of fitness (*e.g.,* decline in body condition) and subsequent reduction in reproductive success, survival, or both (*e.g.,* Harrington and Veitch, 1992; Daan *et al.,* 1996; Bradshaw *et al.,* 1998). However, Ridgway *et al.* (2006) reported that increased vigilance in bottlenose dolphins exposed to sound over a 5-day period did not cause any sleep deprivation or stress effects.

Many animals perform vital functions, such as feeding, resting, traveling, and socializing, on a diel cycle (24-hour cycle). Disruption of such functions resulting from reactions to stressors such as sound exposure are more likely to be significant if they last more than one diel cycle or recur on subsequent days (Southall *et al.,* 2007). Consequently, a behavioral response lasting less than 1 day and not recurring on subsequent days is not considered particularly severe unless it could directly affect reproduction or survival (Southall *et al.,* 2007). Note that there is a difference between multi-day substantive behavioral reactions and multi-day anthropogenic activities. For example, just because an activity lasts for multiple days does not necessarily mean that individual animals are either exposed to activity-related stressors for multiple days or, further, exposed in a manner resulting in sustained multi-day substantive behavioral responses.

Stress Responses—An animal's perception of a threat may be sufficient to trigger stress responses consisting of some combination of behavioral responses, autonomic nervous system responses, neuroendocrine responses, or immune responses (*e.g.,* Selye, 1950; Moberg, 2000). In many cases, an animal's first and sometimes most economical (in terms of energetic costs) response is behavioral avoidance of the potential stressor. Autonomic nervous system responses to stress typically involve changes in heart rate, blood pressure, and gastrointestinal activity. These responses have a relatively short duration and may or may not have a significant long-term effect on an animal's fitness.

Neuroendocrine stress responses often involve the hypothalamus-pituitary-adrenal system. Virtually all neuroendocrine functions that are affected by stress—including immune competence, reproduction, metabolism, and behavior—are regulated by pituitary hormones. Stress-induced changes in the secretion of pituitary hormones have been implicated in failed reproduction, altered metabolism, reduced immune competence, and behavioral disturbance (*e.g.,* Moberg, 1987; Blecha, 2000). Increases in the circulation of glucocorticoids are also equated with stress (Romano *et al.,* 2004).

The primary distinction between ''stress'' (which is adaptive and does not normally place an animal at risk) and ''distress'' is the cost of the response. During a stress response, an animal uses glycogen stores that can be quickly replenished once the stress is alleviated. In such circumstances, the cost of the stress response would not pose serious fitness consequences. However, when an animal does not have sufficient energy reserves to satisfy the energetic costs of a stress response, energy resources must be diverted from other functions. This state of distress will last until the animal replenishes its energetic reserves sufficient to restore normal function.

Relationships between these physiological mechanisms, animal behavior, and the costs of stress responses are well-studied through controlled experiments and for both laboratory and free-ranging animals (*e.g.,* Holberton *et al.,* 1996; Hood *et al.,* 1998; Jessop *et al.,* 2003; Krausman *et al.,* 2004; Lankford *et al.,* 2005). Stress responses due to exposure to anthropogenic sounds or other stressors and their effects on marine mammals have also been reviewed (Fair and Becker, 2000; Romano *et al.,* 2002b) and, more rarely, studied in wild populations (*e.g.,* Romano *et al.,* 2002a). For example, Rolland *et al.* (2012) found that noise reduction from reduced ship traffic in the Bay of Fundy was associated with decreased stress in North Atlantic right whales. These and other studies lead to a reasonable expectation that some marine mammals will experience physiological stress responses upon exposure to acoustic stressors and that it is possible that some of these would be classified as ''distress.'' In addition, any animal experiencing TTS would likely also experience stress responses (NRC, 2003), however distress is an unlikely result of this project based on observations of marine mammals during previous, similar construction projects.

Auditory Masking—Since many marine mammals rely on sound to find prey, moderate social interactions, and facilitate mating (Tyack, 2008), noise from anthropogenic sound sources can interfere with these functions, but only if the noise spectrum overlaps with the hearing sensitivity or vocal ranges of the marine mammal (Southall *et al.,* 2007; Clark *et al.,* 2009; Hatch *et al.,* 2012). Chronic exposure to excessive, though not high-intensity, noise could cause masking at particular frequencies for marine mammals that utilize sound for vital biological functions (Clark *et al.,* 2009). Acoustic masking is when other noises such as from human sources interfere with an animal's ability to detect, recognize, or discriminate between acoustic signals of interest (*e.g.,* those used for intraspecific communication and social interactions, prey detection, predator avoidance, navigation) (Richardson *et al.,* 1995; Erbe *et al.,* 2016). Therefore, under certain circumstances, marine mammals whose acoustical sensors or environment are being severely masked could also be impaired from maximizing their performance fitness in survival and reproduction. The ability of a noise source to mask biologically important sounds depends on the characteristics of both the noise source and the signal of interest (*e.g.,* signal-to-noise ratio, temporal variability, direction), in relation to each other and to an animal's hearing abilities (*e.g.,* sensitivity, frequency range, critical ratios, frequency discrimination, directional discrimination, age, or TTS hearing loss), and existing ambient noise and propagation conditions.

Under certain circumstances, marine mammals experiencing significant masking could also be impaired from maximizing their performance fitness in survival and reproduction. Therefore, when the coincident (masking) sound is human-made, it may be considered harassment when disrupting or altering critical behaviors. It is important to distinguish TTS and PTS, which persist after the sound exposure, from masking, which occurs during the sound exposure. Because masking (without resulting in TS) is not associated with abnormal physiological function, it is not considered a physiological effect, but rather a potential behavioral effect.

The frequency range of the potentially masking sound is important in determining any potential behavioral impacts. For example, low-frequency signals may have less effect on high-frequency echolocation sounds produced by odontocetes but are more likely to affect detection of mysticete communication calls and other potentially important natural sounds such as those produced by surf and some prey species. The masking of communication signals by anthropogenic noise may be considered as a reduction in the communication space of animals (*e.g.,* Clark *et al.,* 2009) and may result in energetic or other costs as animals change their vocalization behavior (*e.g.,* Miller *et al.,* 2000; Foote *et al.,* 2004; Parks *et al.,* 2007; Di Iorio and Clark, 2010; Holt *et al.,* 2009). Masking can be reduced in situations where the signal and noise come from different directions (Richardson *et al.,* 1995), through amplitude modulation of the signal, or through other compensatory behaviors (Houser, 2014). Masking can be tested directly in captive species (*e.g.,* Erbe, 2008), but in wild populations it must be either modeled or inferred from evidence of masking compensation. There are few studies addressing real-world masking sounds likely to be experienced by marine mammals in the wild (*e.g.,* Branstetter *et al.,* 2013).

Marine mammals near the proposed project site are exposed to anthropogenic noise which may lead to some habituation, but is also a source of masking. Vocalization changes may result from a need to compete with an increase in background noise and include increasing the source level, modifying the frequency, increasing the call repetition rate of vocalizations, or ceasing to vocalize in the presence of increased noise (Hotchkin and Parks, 2013).

Masking is more likely to occur in the presence of broadband, relatively continuous noise sources. Energy distribution of pile driving covers a broad frequency spectrum, and sound from pile driving would be within the audible range of pinnipeds and cetaceans present in the proposed action area. While some construction during the DOT&PF's activities may mask some acoustic signals that are relevant to the daily behavior of marine mammals, the short-term duration and limited areas affected make it very unlikely that survival would be affected.

Airborne Acoustic Effects—Pinnipeds that occur near the project site could be exposed to airborne sounds associated with construction activities that have the potential to cause behavioral harassment, depending on their distance from these activities. Airborne noise would primarily be an issue for pinnipeds that are swimming or hauled out near the project site within the range of noise levels elevated above airborne acoustic criteria. Although pinnipeds are known to haul-out regularly on man-made objects, incidents of take resulting solely from airborne sound are unlikely due to the sheltered proximity between the proposed project area and the known haulout sites (the closest known pinniped haulout is for harbor seals, which is located 4.5 km (2.8 mi) southeast of the proposed project site, but blocked by a land shadow). Cetaceans are not expected to be exposed to airborne sounds that would result in harassment as defined under the MMPA.

We recognize that pinnipeds in the water could be exposed to airborne sound that may result in behavioral harassment when looking with their heads above water. Most likely, airborne sound would cause behavioral responses similar to those discussed above in relation to underwater sound. For instance, anthropogenic sound could cause hauled-out pinnipeds to exhibit changes in their normal behavior, such as reduction in vocalizations, or cause them to temporarily abandon the area and move further from the source. However, these animals would previously have been ''taken'' because of exposure to underwater sound above the behavioral harassment thresholds, which are in all cases larger than those associated with airborne sound. Thus, the behavioral harassment of these animals is already accounted for in these estimates of potential take. Therefore, we do not believe that authorization of incidental take resulting from airborne sound for pinnipeds is warranted, and airborne sound is not discussed further here.

Potential Effects on Marine Mammal Habitat

The proposed project will occur within the same footprint as existing marine infrastructure. The nearshore and intertidal habitat where the proposed project will occur is an area of relatively high marine vessel traffic. Most marine mammals do not generally use the area within the footprint of the project area. Temporary, intermittent, and short-term habitat alteration may result from increased noise levels within the Level A and Level B harassment zones. Effects on marine mammals will be limited to temporary displacement from pile installation and removal noise, and effects on prey species will be similarly limited in time and space.

Water Quality—Temporary and localized reduction in water quality will occur as a result of in-water construction activities. Most of this effect will occur during the installation and removal of piles and bedrock removal when bottom sediments are disturbed. The installation and removal of piles and bedrock removal will disturb bottom sediments and may cause a temporary increase in suspended sediment in the project area. During pile extraction, sediment attached to the pile moves vertically through the water column until gravitational forces cause it to slough off under its own weight. The small resulting sediment plume is expected to settle out of the water column within a few hours. Studies of the effects of turbid water on fish (marine mammal prey) suggest that concentrations of suspended sediment can reach thousands of milligrams per liter before an acute toxic reaction is expected (Burton, 1993).

Impacts to water quality from DTH hammers are expected to be similar to those described for pile driving. Impacts to water quality would be localized and temporary and would have negligible impacts on marine mammal habitat. Effects to turbidity and sedimentation are expected to be short-term, minor, and localized. Since the currents are strong in the area, following the completion of sediment-disturbing activities, suspended sediments in the water column should dissipate and quickly return to background levels in all construction scenarios. Turbidity within the water column has the potential to reduce the level of oxygen in the water and irritate the gills of prey fish species in the proposed project area. However, turbidity plumes associated with the project would be temporary and localized, and fish in the proposed project area would be able to move away from and avoid the areas where plumes may occur. Therefore, it is expected that the impacts on prey fish species from turbidity, and therefore on marine mammals, would be minimal and temporary. In general, the area likely impacted by the proposed construction activities is relatively small compared to the available marine mammal habitat in southeast Alaska.

Potential Effects on Prey—Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (*e.g.,* crustaceans, cephalopods, fish, zooplankton). Marine mammal prey varies by species, season, and location and, for some, is not well documented. Studies regarding the effects of noise on known marine mammal prey are described here.

Fish utilize the soundscape and components of sound in their environment to perform important functions such as foraging, predator avoidance, mating, and spawning (*e.g.,* Zelick and Mann, 1999; Fay, 2009). Depending on their hearing anatomy and peripheral sensory structures, which vary among species, fishes hear sounds using pressure and particle motion sensitivity capabilities and detect the motion of surrounding water (Fay *et al.,* 2008). The potential effects of noise on fishes depends on the overlapping frequency range, distance from the sound source, water depth of exposure, and species-specific hearing sensitivity, anatomy, and physiology. Key impacts to fishes may include behavioral responses, hearing damage, barotrauma (pressure-related injuries), and mortality.

Fish react to sounds that are especially strong and/or intermittent low-frequency sounds. Short duration, sharp sounds can cause overt or subtle changes in fish behavior and local distribution. The reaction of fish to noise depends on the physiological state of the fish, past exposures, motivation (*e.g.,* feeding, spawning, migration), and other environmental factors. Hastings and Popper (2005) identified several studies that suggest fish may relocate to avoid certain areas of sound energy. Additional studies have documented effects of pile driving on fishes; several are based on studies in support of large, multiyear bridge construction projects (*e.g.,* Scholik and Yan, 2001, 2002; Popper and Hastings, 2009). Several studies have demonstrated that impulse sounds might affect the distribution and behavior of some fishes, potentially impacting foraging opportunities or increasing energetic costs (*e.g.,* Fewtrell and McCauley, 2012; Pearson *et al.,* 1992; Skalski *et al.,* 1992; Santulli *et al.,* 1999; Paxton *et al.,* 2017). However, some studies have shown no or slight reaction to impulse sounds (*e.g.,* Peña *et al.,* 2013; Wardle *et al.,* 2001; Jorgenson and Gyselman, 2009; Cott *et al.,* 2012). More commonly, though, the impacts of noise on fishes are temporary.

SPLs of sufficient strength have been known to cause injury to fishes and fish mortality (summarized in Popper *et al.,* 2014). However, in most fish species, hair cells in the ear continuously regenerate and loss of auditory function likely is restored when damaged cells are replaced with new cells. Halvorsen *et al.* (2012a) showed that a TTS of 4–6 dB was recoverable within 24 hours for one species. Impacts would be most severe when the individual fish is close to the source and when the duration of exposure is long. Injury caused by barotrauma can range from slight to severe and can cause death, and is most likely for fish with swim bladders. Barotrauma injuries have been documented during controlled exposure to impact pile driving (Halvorsen *et al.,* 2012b; Casper *et al.,* 2013).

Essential fish habitat (EFH) has been designated in the proposed project area for all five species of salmon *(i.e.,* chum salmon, pink salmon, coho salmon, sockeye salmon, and Chinook salmon; NMFS 2017), which are common prey of marine mammals. Many creeks flowing into Sukkwan Strait and nearby areas are known to contain salmonids, including three primary creeks: Hydaburg River, Natzuhini River, and Saltery Creek (Giefer and Blossom

2020); however, adverse effects on EFH in this area are not expected.

Fish populations in the proposed project area that serve as marine mammal prey could be temporarily affected by noise from pile installation and removal. The frequency range in which fish generally perceive underwater sounds is 50 to 2,000 Hz, with peak sensitivities below 800 Hz (Popper and Hastings, 2009). Fish behavior or distribution may change, especially with strong and/or intermittent sounds that could harm fish. High underwater SPLs have been documented to alter behavior, cause hearing loss, and injure or kill individual fish by causing serious internal injury (Hastings and Popper, 2005).

The greatest potential impact to fishes during construction would occur during impact pile driving and DTH excavation. In-water construction activities would only occur during daylight hours allowing fish to forage and transit the project area in the evening. Vibratory pile driving would possibly elicit behavioral reactions from fishes such as temporary avoidance of the area but is unlikely to cause injuries to fishes or have persistent effects on local fish populations. In general, impacts on marine mammal prey species are expected to be minor, localized, and temporary.

In-Water Construction Effects on Potential Foraging Habitat

The proposed activities would not result in permanent impacts to habitats used directly by marine mammals. The total seafloor area affected by pile installation and removal is a very small area compared to the vast foraging area available to marine mammals outside this project area. Construction would have minimal permanent and temporary impacts on benthic invertebrate species, a marine mammal prey source. In addition, although southeast Alaska in its entirety is listed as a BIA for humpback whales (Wild *et al.,* 2023), the proposed project area does not contain particularly high-value habitat and is not unusually important for this species or any of the other species potentially impacted by the DOT&PF's proposed activities. Therefore, impacts of the project are not likely to have adverse effects on marine mammal foraging habitat in the proposed project area.

The area impacted by the proposed project is relatively small compared to the available habitat just outside the project area, and there are no areas of particular importance that would be impacted by this project. Any behavioral avoidance by fish of the disturbed area would still leave significantly large areas of fish and marine mammal foraging habitat in the nearby vicinity. As described in the preceding, the potential for the DOT&PF's construction to affect the availability of prey to marine mammals or to meaningfully impact the quality of physical or acoustic habitat is considered to be insignificant.

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform both NMFS' consideration of "small numbers," and the negligible impact determinations.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would primarily be by Level B harassment, as use of the acoustic source (*i.e.,* vibratory pile driving, impact pile driving, and DTH systems) has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory (Level A harassment) to result, primarily for mysticetes and high frequency species and phocids because predicted auditory injury zones are larger than for mid-frequency species and otariids. Auditory injury is unlikely to occur for mid-frequency species or otariids. The proposed mitigation and monitoring measures are expected to minimize the severity of the taking to the extent practicable. As described previously, no serious injury or mortality is anticipated or proposed to be authorized for this activity. Below we describe how the proposed take numbers are estimated.

For acoustic impacts, generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these factors can contribute to a basic calculation to provide an initial prediction of potential takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.,* previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimates.

Acoustic Thresholds

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

Level B Harassment—Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source or exposure context (*e.g.,* frequency, predictability, duty cycle, duration of the exposure, signal-to-noise ratio, distance to the source), the environment (*e.g.,* bathymetry, other noises in the area, predators in the area), and the receiving animals (hearing, motivation, experience, demography, life stage, depth) and can be difficult to predict (*e.g.,* Southall *et al.,* 2007, 2021, Ellison *et al.,* 2012). Based on what the available science indicates and the practical need to use a threshold based on a metric that is both predictable and measurable for most activities, NMFS typically uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS generally predicts that marine mammals are likely to be behaviorally harassed in a manner considered to be Level B harassment when exposed to underwater anthropogenic noise above root-mean-squared pressure received levels (RMS SPL) of 120 dB re 1 μPa for continuous (*e.g.,* vibratory pile-driving, drilling) and above RMS SPL 160 dB re 1 μPa for non-explosive impulsive (*e.g.,* seismic airguns) or intermittent (*e.g.,* scientific sonar) sources. Generally speaking, Level B harassment take estimates based on these behavioral harassment thresholds are expected to include any likely takes by TTS as, in most cases, the likelihood of TTS occurs at distances from the source less than those at which behavioral harassment is likely. TTS of a sufficient degree can manifest as behavioral harassment, as reduced hearing sensitivity and the potential reduced opportunities to detect important signals (conspecific communication, predators, prey) may result in changes in behavior patterns that would not otherwise occur.

The DOT&PF's proposed activity includes the use of continuous (vibratory pile driving) and intermittent (impact pile driving) sources, and therefore the RMS SPL thresholds of 120 and 160 dB re 1 μPa are applicable. DTH systems have both continuous, non-impulsive, and impulsive components as discussed in the *Description of Sound Sources* section above. When evaluating Level B harassment, NMFS recommends treating DTH as a continuous source and applying the RMS SPL thresholds of 120 dB re 1 μPa.

Level A Harassment—NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). The DOT&PF's proposed construction includes the use of impulsive (impact pile driving) and non-impulsive (vibratory pile driving) sources. As described above, DTH includes both impulsive and non-impulsive characteristics. When evaluating Level A harassment, NMFS recommends treating DTH as an impulsive source.

The thresholds used to identify the onset of PTS are provided in Table 4. The references, analysis, and methodology used in the development of the thresholds are described in NMFS' 2018 Technical Guidance, which may be accessed at: *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance.*

TABLE 4—THRESHOLDS IDENTIFYING THE ONSET OF PERMANENT THRESHOLD SHIFT

Hearing Group	PTS onset acoustic thresholds * (received level)	
	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	*Cell 1:* $L_{pk,flat}$: 219 dB; $L_{E,LF,24h}$: 183 dB	*Cell 2:* $L_{E,LF,24h}$: 199 dB.
Mid-Frequency (MF) Cetaceans	*Cell 3:* $L_{pk,flat}$: 230 dB; $L_{E,MF,24h}$: 185 dB	*Cell 4:* $L_{E,MF,24h}$: 198 dB.
High-Frequency (HF) Cetaceans	*Cell 5:* $L_{pk,flat}$: 202 dB; $L_{E,HF,24h}$: 155 dB	*Cell 6:* $L_{E,HF,24h}$: 173 dB.
Phocid Pinnipeds (PW) (Underwater)	*Cell 7:* $L_{pk,flat}$: 218 dB; $L_{E,PW,24h}$: 185 dB	*Cell 8:* $L_{E,PW,24h}$: 201 dB.
Otariid Pinnipeds (OW) (Underwater)	*Cell 9:* $L_{pk,flat}$: 232 dB; $L_{E,OW,24h}$: 203 dB	*Cell 10:* $L_{E,OW,24h}$: 219 dB.

* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.

Note: Peak sound pressure (L_{pk}) has a reference value of 1 μPa, and cumulative sound exposure level (L_E) has a reference value of 1μPa²s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for NMFS' 2018 Technical Guidance. Hence, the subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (*i.e.,* varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that are used in estimating the area ensonified above the acoustic thresholds, including source levels and transmission loss coefficient.

The sound field in the project area is the existing background noise plus additional construction noise from the proposed project. Marine mammals are expected to be affected via sound generated by the primary components of the project (*i.e.,* impact pile installation, vibratory pile installation, vibratory pile removal, and DTH).

Sound Source Levels of Proposed Activities—The intensity of pile driving sounds is greatly influenced by factors such as the type of piles (material and diameter), hammer type, and the physical environment (*e.g.,* sediment type) in which the activity takes place. The DOT&PF evaluated SPL and TL measurements available for certain pile types and sizes from similar activities elsewhere in Alaska or outside of Alaska and relied on relevant sound source verification studies to determine appropriate proxy levels for their proposed activities. Recently proposed and issued IHAs from southeast Alaska were also reviewed to identify the most appropriate SPLs and TL coefficients for use in this application. NMFS agrees that the SPL values and TL coefficients that the DOT&PF proposed for vibratory installation and removal and impact installation of 16-inch (40.64 cm), 20-inch (50.80 cm), and 24-inch (60.96 cm) steel piles are appropriate proxy levels for their proposed construction activities (see Table 5 for proposed proxy levels). However, NMFS finds that DOT&PF's proposed SPL values for 8-inch (20.32 cm) tension anchors and TL coefficients for all DTH activities (described in further detail below) are not consistent with what NMFS assesses to be the best available science, and instead proposes for use SPLs and TL coefficients for DTH consistent with NMFS' recommendations for analyses of noise from DTH systems (*https://media.fisheries.noaa.gov/2022-11/PUBLIC%20DTH%20Basic%20Guidance_November%202022.pdf*) (NMFS, 2022). NMFS specifically requests comments on its proposed SPL values and TL coefficients for DTH systems, assessment that these values are more appropriate than those proposed by DOT&PF, as well as on its DTH recommendations generally. Note that the values in Table 5 represent SPL referenced at a distance of 10 m from the source.

TABLE 5—SUMMARY OF UNATTENUATED IN-WATER PILE DRIVING PROXY LEVELS (AT 10 m) AND TRANSMISSION LOSS COEFFICIENTS

Pile type	Installation method	Peak SPL (dB re 1 μPa)	RMS SPL (dB re 1 μPa)	SEL_{ss} (dB re 1 μPa² sec)	Reference (levels)
16-inch steel piles	Vibratory hammer	NA	158	NA	CALTRANS (2020).
20-inch steel piles	Vibratory hammer	NA	161	NA	Navy (2015).
24-inch steel piles	Vibratory hammer	NA	161	NA	Navy (2015).
20-inch steel piles	Impact hammer	208	187	176	CALTRANS (2020).
24-inch steel piles	Impact hammer	208	193	178	CALTRANS (2020).
8-inch tension anchors	DTH system	[2] 170	156	[2] 144	Reyff and Heyvaert (2019); Reyff (2020).
20-inch rock sockets	DTH system	184	167	159	Heyvaert and Reyff (2021).
24-inch rock sockets	DTH system	184	167	159	Heyvaert and Reyff (2021).

Notes: NMFS conservatively assumes that noise levels during vibratory pile removal are the same as those during installation for the same type and size pile; all SPLs are unattenuated and represent the SPL referenced at a distance of 10 m from the source; NA = Not applicable; dB re 1 μPa = decibels (dB) referenced to a pressure of 1 micropascal.

NMFS recommends that DTH system installation be treated as a continuous sound source for Level B behavioral harassment calculations and as an impulsive source for Level A harassment calculations (NMFS, 2022) given these systems produce noise including characteristics of both source types (described above in the *Description of Sound Sources* section). The DOT&PF reviewed projects that were most similar to the specified activity in terms of drilling activities, type and size of piles installed, method of pile installation, and substrate conditions. Data from DTH system installation of 24-inch (60.96-cm) piles in Tenakee Springs, Alaska, indicate a continuous RMS SPL of 167 dB, an impulsive peak SPL of 184 dB, and a SEL_{ss} level of 159 dB (all at 10 m) (Heyvaert and Reyff, 2021). Therefore, DOT&PF proposed these levels as proxy values for DTH system installation of 20- and 24-inch (50.80- and 60.96-cm) rock sockets during the proposed activities. NMFS concurs that these levels are appropriate proxy levels for the installation of rock sockets via DTH systems for the proposed project (Table 5).

TL coefficient data from Denes *et al.* (2016) and Heyvaert and Reyff (2021) indicate that sounds from 24-inch (60.96-cm) drilling rock sockets in Kodiak and Tenakee Springs, Alaska, decay at rates ranging from $18.9*\log_{10}(R)$ to $20.3*\log_{10}(R)$, where R indicates range from the subject pile, for RMS SPLs, respectively. Therefore, Reyff (2022) recommends in Appendix C of the DOT&PF's application that sounds from DTH activities are characteristic of a point source and proposed a TL coefficient of 19.0 be used as a proxy for 20- and 24-inch (50.80- and 60.96-cm) rock socket installation in Hydaburg (Denes *et al.,* 2016; Heyvaert and Reyff, 2021). While there is evidence that TL coefficients can be high during DTH activities (*e.g.,* Denes *et al.,* 2016; Reyff, 2020; Heyvaert and Reyff, 2021), TL coefficient measurements reported from DTH activities are highly variable and in some cases have been reported to be lower, and more representative of practical spreading models (*i.e.,* $15*\log_{10}(R)$). For example, recent rock socket measurements from Tongass Narrows in Ketchikan, Alaska, located approximately 76 km east of Hydaburg, Alaska, reported TL coefficients of 14.1 for SEL_{ss}, 14.3 for RMS SPL, and 14.8 for Peak SPL measurements of 24-inch (60.96-cm) open-end steel piles for ranges recorded out to 80–95 m (Miner, 2023). Other rock socket measurements from Skagway, Alaska, reported TL coefficients of 13.3 for SEL_{ss} and 13.8 for Peak SPL measurements of 42-inch (106.68-cm) steel piles for ranges recorded out to 1,400 m from the pile (Reyff, 2020). Further, the TL measurements reported by Denes *et al.* (2016) and Heyvaert and Reyff (2021) in Kodiak and Tenakee Springs, Alaska, were also high for impact and vibratory pile driving. For example, in Tenakee Springs, TL coefficients for impact pile driving of 18-inch (45.75-cm) steel battered piles, 24-inch (60.96-cm) steel vertical piles, and 30-inch (76.20-cm) steel battered and vertical piles ranged from 18.8 to 19.1 for SEL_{ss}, 19.6 to 20.1 for RMS SPL, and 18.9 to 20.0 for Peak SPL measurements recorded out to 1,100 m (Heyvaert and Reyff, 2021). The TL coefficients reported for impact pile driving and vibratory pile driving of 24-inch (60.96-cm) piles in Kodiak, when considering monitoring ranges out to 1,125 m, were 20.3 and 21.9 for RMS SPL, respectively (Denes *et al.,* 2016). Therefore, the TL coefficients reported by these two studies, and used by Reyff (2022) and the DOT&PF to support a proxy TL coefficient of 19.0, may not be representative of TL coefficients in other locations in southeast Alaska or potentially at those same locations under different conditions. In addition, all of the acoustic measurements (*i.e.,* for vibratory, impact, and DTH pile driving) from Kodiak were missing energy on the recordings between 50–300 Hz due to the shallow bathymetry in the region (which did not support propagation of low frequencies), making their data less suitable for use as proxy data as they did not include the full range of frequencies produced by the construction activities (Denes *et al.,* 2016).

As described in the *Description of Sound Sources* section, sound propagation, and thus TL, through an environment can be complicated and depend on a multitude of factors (*e.g.,* seabed type, bathymetry, and the local sound speed profiles, characteristics of the sound itself), which can vary temporally and spatially. Many of these factors that affect sound propagation and TL are thus site- and time-specific. For coastal activities, such as pile driving, if area-specific information on propagation/transmission loss is not available, NMFS generally recommends practical spreading ($TL=15 * \log_{10}(R)$) (*e.g.,* Stadler and Woodbury, 2009; CALTRANS, 2015; NMFS, 2020). There are no site specific TL data available for the drilling of rock sockets in Hydaburg, Alaska. Therefore, at this time, NMFS has preliminarily determined that DOT&PF's proposed TL coefficient of 19.0 for the installation of rock sockets during their proposed project is inappropriate, and instead proposes a default TL coefficient of 15.0 be used for these activities. This is consistent with the recommendations outlined in NMFS (2020) and NMFS (2022).

Underwater noise from tension anchor construction is typically lower than noise produced by other DTH activities. During tension anchor construction, the casing used during drilling is inside a larger-diameter pile, reducing noise levels. In addition, anchor holes are substantially smaller in diameter and deeper than rock sockets, and therefore, result in much lower sound (Reyff and Heyvaert, 2019). The DOT&PF and NMFS agree that a continuous RMS SPL of 156 dB (at 10 m) (Reyff and Heyvaert, 2019) is the most appropriate proxy level to use for the installation of 8-inch (20.32-cm) tension anchors at this time. However, DOT&PF proposed that 8-inch (20.32-cm) tension anchors should be considered as a solely non-impulsive, continuous sound source when calculating Level A and Level B behavioral harassment rather than as having both impulsive (Level A) and continuous (Level B behavioral harassment) components as recommended by NMFS (2022). DOT&PF based this argument on the finding that Heyvaert and Reyff (2021) could not classify the tension anchor installation as impulsive for the purposes of Level A harassment zone calculations because the impulse sound level was generally not much louder than the continuous sound level. However, there is evidence that DTH piling and DTH drilling contains impulsive components (*i.e.,* pulsed sounds) (Guan *et al.,* 2022), including from Heyvaert and Reyff (2021) who reported that sounds from tension rock anchor installation had impulsive characteristics, but that the noise from these pulses were not distinctly higher than the constant drilling sounds. It is important to account for these impulsive characteristics since they have a greater potential to cause noise-induced hearing loss compared to non-impulsive sounds. Thus, there does not appear to be enough evidence to indicate that 8-inch (20.32-cm) rock tension anchor piles have no impulsive components. Therefore, as the data suggest is appropriate, NMFS proposes impulsive SEL_{ss} values of 144 dB and 170 dB peak SPL (Reyff, 2020), respectively (at 10 m), for the DTH system installation of 8-inch (20.32-cm) tension anchors during the proposed activity.

DOT&PF propose a TL coefficient of 19.0 for 8-inch (20.32-cm) tension anchors based on the measurements from Skagway, Alaska (Reyff and Heyvaert, 2019; Reyff, 2020) and Tenakee Springs, Alaska (Heyvaert and Reyff, 2021) as recommended in Reyff (2022) in Appendix C of the DOT&PF's application. These are the only two hydroacoustic studies both the DOT&PF and NMFS are aware of that have involved the installation of tension anchors. Reyff and Heyvaert (2019) and Reyff (2020) (which provides an update to Reyff and Heyvaert, 2019) reported a TL coefficient of 24.2 for RMS SPL values recorded from 36 to 110 m from the pile of 8-inch (20.32-cm) rock tension anchors in Skagway, Alaska. Heyvaert and Reyff (2021) reported a TL coefficient of 19.2 for RMS SPL values recorded from 9 to 900 m of 8-inch (20.32-cm) rock anchor casings installed within 24-inch (60.96-cm) diameter vertical piles and 17.0 for RMS SPL values recorded from 10 to 110 m of 8-inch (20.32-cm) rock anchor casings installed within 18-inch (45.75 cm) diameter battered piles in Tenakee Springs, Alaska.

As discussed above, TL measurements from this particular study in Tenakee Springs appear to be higher in general for all pile driving activities (vibratory and impact pile driving and DTH systems) and thus may not be representative of TL coefficients recorded elsewhere in southeast Alaska or under different circumstances at Tenakee Springs. For the Skagway dataset, sound level measurements were only made out to 110 m, and therefore it is unknown if the resulting TL coefficient is representative at greater distances. While there is data to suggest that TL coefficients from the installation of tension anchors may typically be higher than $15*\log_{10}(R)$ (*e.g.,* Reyff and Heyvaert, 2019; Reyff, 2020; Heyvaert and Reyff, 2021), these data are based on measurements of only a few piles and they were obtained from study sites located over 320 km away from Hydaburg, Alaska. Thus, given the lack of site specific TL measurements for the installation of tension anchors in Hydaburg, at this time, NMFS does not agree with the DOT&PF's proposed TL coefficient of 19.0 for the DTH installation of rock tension anchor piles and instead proposes a default TL coefficient of 15.0, which is consistent with recommendations outlined in NMFS (2020) and NMFS (2022).

Estimated Harassment Isopleths—All Level B harassment isopleths are reported in Table 7 considering RMS SPLs and the default TL coefficient. Land forms (including causeways, breakwaters, islands, and other land masses) impede the transmission of underwater sound and create shadows behind them where sound from construction is not audible. At Hydaburg, Level B harassment isopleths from the proposed project will be blocked by Sukkwan Island, Spook Island, Mushroom Island, and the coastline along Prince of Wales Island both southeast and northwest of the project site. The maximum distance that a harassment isopleth can extend due to these land masses is 5,162 m.

The ensonified area associated with Level A harassment is technically challenging to predict due to the need to account for a duration component. Therefore, NMFS developed an optional User Spreadsheet tool to accompany the Technical Guidance (2018) that can be used to relatively simply predict an isopleth distance for use in conjunction with marine mammal density or occurrence to help predict potential takes. We note that because of some of the assumptions included in the methods underlying this optional tool, we anticipate that the resulting isopleth estimates are typically going to be overestimates of some degree, which may result in an overestimate of potential take by Level A harassment. However, this optional tool offers the best way to estimate isopleth distances when more sophisticated modeling methods are not available or practical. For stationary sources (such as from impact pile driving, vibratory pile driving, and DTH), the optional User Spreadsheet tool predicts the distance at which, if a marine mammal remained at that distance for the duration of the activity, it would be expected to incur PTS. Inputs used in the optional User Spreadsheet tool are reported in Table 6 and the resulting estimated isopleths are reported in Table 7. (Please see Table 6–5 in the DOT&PF's application for harassment isopleths calculated using the DTH TL coefficients and source levels for 8-in (20.32-cm) tension anchors proposed therein).

TABLE 6—NMFS USER SPREADSHEET INPUTS

	Vibratory pile driving				Impact pile driving		DTH	
	16-inch steel piles	20-inch steel piles	24-inch steel piles		20-inch steel piles	24-inch steel piles	20- and 24-inch rock socket	8-inch tension anchor
	Removal	Installation/ removal	Installation	Removal	Installation	Installation	Installation	Installation
Spreadsheet Tab Used	A.1) Non-Impul, Stat, Cont.	A.1) Non-Impul, Stat, Cont.	A.1) Non-Impul, Stat, Cont.	A.1) Non-Impul, Stat, Cont.	E.1) Impact pile driving.	E.1) Impact pile driving.	E.2) DTH Systems.	A.1) DTH Systems.
Source Level (SPL)	158 dB RMS	161 dB RMS	161 dB RMS	161 dB RMS	176 dB SEL	178 dB SEL	159 dB RMS	144 dB RMS.
Transmission Loss Coefficient.	15	15	15	15	15	15	15	15.
Weighting Factor Adjustment (kHz).	2.5	2.5	2.5	2.5	2	2	2	2.
Time to install/remove single pile (minutes).	30	15/30 [1]	15/30 [1]	30			60–480 [2]	60–240.[2]
Number of strikes per pile					50	50	15	15.
Piles per day	2	2/10 [1]	2/10 [1]	2	1/2 [1]	1/2 [1]	1	1.
Distance of sound pressure level measurement (m).	10	10	10	10	10	10	10	10.

[1] A maximum scenario was calculated for this activity.
[2] A range of scenarios was calculated for this activity.

TABLE 7—DISTANCES TO LEVEL A HARASSMENT, BY HEARING GROUP, AND DISTANCES AND AREAS OF LEVEL B HARASSMENT THRESHOLDS PER PILE TYPE AND PILE DRIVING METHOD

Activity	Pile size	Minutes (min) or strikes per pile	Piles per day	Level A harassment distance (m)					Level B harassment distance (m) all hearing groups	Level B harassment area (km²) all hearing groups
				LF	MF	HF	PW	OW		
Vibratory Installation	20- and 24-inch	15 min	2	5	1	7	3	1	[3] 5,412	[4] 4.34
		30 [1] min	[1] 10	20	2	30	13	1		
Vibratory Removal	16-inch	30 min	2	5	1	7	3	1	3,415	3.90
	24-inch	30 min	2	7	1	11	5	1	[3] 5,412	[4] 4.34
Impact Installation	20-inch	50 strikes	1	47	2	56	25	2	1,585	2.14
		50 [1] strikes	[1] 2	74	3	88	40	3		
	24-inch	50 strikes	1	63	3	75	34	3	631	0.65
		50 [1] strikes	[1] 2	100	4	119	54	4		
DTH (Rock Socket) [2]	20- and 24-inch	60 min	1	359	13	427	192	14	[3] 13,594	[4] 4.34
		120 min	1	569	21	678	305	23		
		180 min	1	746	27	888	399	29		
		240 min	1	903	33	1,076	484	36		
		300 min	1	1,048	38	1,249	561	41		
		360 min	1	1,184	43	1,410	634	47		
		420 min	1	1,312	47	1,563	702	52		
		480 min	1	1,434	51	1,708	768	56		
DTH (Tension Anchor) [2].	8-inch	60 min	1	36	2	43	20	2	2,512	3.07
		120 min	1	57	2	68	31	3		
		180 min	1	75	3	89	40	3		
		240 min	1	91	4	108	4	4		
		300 min	1	105	4	125	57	5		
		360 min	1	119	5	141	64	5		
		420 min	1	132	5	157	71	6		
		480 min	1	144	6	171	77	6		

[1] A maximum scenario was calculated for this activity.
[2] A range of scenarios was calculated for this activity.
[3] Harassment distances would be truncated where appropriate to account for land masses, to a maximum distance of 5,162 m.
[4] Harassment areas are truncated where appropriate to account for land masses, to a maximum area of 4.34 km².

Marine Mammal Occurrence and Take Estimation

In this section we provide information about the occurrence of marine mammals, including density or other relevant information that will inform the take calculations. We also describe how this information is synthesized to produce a quantitative estimate of the take that is reasonably likely to occur and proposed for authorization. Although construction is currently planned to begin in fall 2023, unexpected delays associated with construction can occur. To account for this uncertainty, the following exposure estimates assume that construction would occur during the periods of peak abundance for those species for which abundance varies seasonally.

Due to the differences in the DTH analysis between the DOT&PF's application and this notice, estimated Level B harassment isopleths for DTH activities are larger than those calculated by the DOT&PF (Tables 6–4 and 6–5 in the DOT&PF's application versus Table 7 in this notice). However, because Level B harassment isopleths are truncated by local land masses, the maximum estimated areas of ensonification for Level B harassment are equivalent. Therefore, no adjustment is needed to estimates of total take.

Steller Sea Lion

No density or abundance numbers exist for Steller sea lions in the proposed action area, and they are not known to regularly occur near Hydaburg. However, in context of a lack of local data, the DOT&PF

conservatively estimated that during peak salmon runs, 6 groups of 10 individuals could be exposed to project-related underwater noise each week during pile installation and removal activities, for a total of 240 exposures (4 weeks * 60 sea lions per week = 240 total exposures).

DOT&PF's largest estimated Level A harassment zone for Steller sea lions was 39 m (see Tables 6–4 and 6–5 in the DOT&PF's application). Based on this assumption, the DOT&PF assumed that it would be unlikely for a Steller sea lion to approach that closely and remain unobserved for a period of time long enough to incur PTS. While the harassment isopleths estimated herein are larger than those proposed by the DOT&PF (see Table 7), the largest Level A harassment zone for Steller sea lions is still only 59 m. Due to the small Level A harassment zones (Table 7) and the implementation of shutdown zones, which will be larger than Level A harassment zones (described below in the Proposed Mitigation section), NMFS concurs with the DOT&PFs assessment that take by Level A harassment is not anticipated for Steller sea lions. Therefore, NMFS proposes to authorize all 240 estimated exposures as takes by Level B harassment. Takes by Level A harassment for Steller sea lions are not proposed to be authorized.

Harbor Seal

Up to six known harbor seal haulouts are located near the proposed project area; however, they are all located outside of the estimated harassment zones, with the closest haulout located just over 4.5 km (2.8 mi) southeast of the proposed project site, but blocked by a land shadow (see Figure 4–2 in the DOT&PF's application). Within the project area, harbor seals remain relatively rare as described by local residents. The DOT&PF conservatively estimated that up to 8 harbor seals could be within estimated harassment zones each day during pile installation and removal activities, for a total of 208 exposures (26 days * 8 seals per day = 208 total exposures).

DOT&PF's largest estimated Level A harassment zone for harbor seals was 308 m (see Tables 6–4 and 6–5 in the DOT&PF's application). While there are no known harbor seal haulouts located within this distance, it is possible that harbor seals may approach and enter within this distance for sufficient duration to incur PTS. DOT&PF estimated that up to 12 harbor seals per week could occur within the Level A harassment zones. Based on this analysis, and the DOT&PF's proposal to implement a shutdown zone larger than the largest Level A harassment zone (*i.e.,* 310 m, see Table 6–5 in the DOT&PF's application), the DOT&PF requested that 48 takes by Level A harassment (12 exposures per week * 4 weeks of pile installation = 48 exposures) and 160 takes by Level B harassment (208 total exposures minus 48 takes by Level A harassment) be proposed for authorization.

The largest Level A harassment zone for harbor seals, as estimated by NMFS, is 768 m. While there are still no known harbor seal haulouts within this distance, the likelihood of harbor seals occurring within the Level A harassment zones for sufficient duration to incur PTS increases. Further, the largest practicable shutdown zone that the DOT&PF states it can implement for harbor seals is 400 m (described below in the Proposed Mitigation section), which is smaller than the Level A harassment zones estimated to result from 240 or more minutes of 20- and 24-inch (50.8- and 60.96-cm) DTH rock socket installation. To account for this difference, NMFS proposes to authorize additional takes by Level A harassment, as compared with the DOT&PF's request. Additional takes were determined by calculating the ratio of the largest Level A harassment area for 20- and 24-inch (50.8- and 60.96-cm) DTH activities (*i.e.,* 0.89 km^2 for a Level A harassment distance of 768 m) minus the area of the proposed shutdown zone for harbor seals (*i.e.,* 0.27 km^2 for a shutdown zone distance of 400 m) to the area of the Level B harassment isopleth (4.34 km^2 for a Level B harassment distance of 5,162 m) (*i.e.,* (0.89 $km^2 - 0.27$ km^2)/4.34 km^2 = 0.14). We then multiplied this ratio by the total number of estimated harbor seal exposures to determine additional take by Level A harassment (*i.e.,* 0.14 * 208 exposures = 29.12 takes, rounded up to 30 takes). The total proposed take by Level A harassment was then calculated as the take originally proposed and requested by the DOT&PF plus the additional take calculated by NMFS (*i.e.,* 48 + 30), for a total of 78 takes by Level A harassment. Takes by Level B harassment were calculated as the number of estimated harbor seal exposures minus the proposed amount of take by Level A harassment (*i.e.,* 208 − 78). Therefore, NMFS proposes to authorize 78 takes by Level A harassment and 130 takes by Level B harassment for harbor seals, for a total of 208 takes.

Northern Elephant Seal

Northern elephant seal abundance throughout coastal southeast Alaska is low, and anecdotal reports have not included northern elephant seals near the proposed project area. However, northern elephant seals have been observed elsewhere in southeast Alaska; therefore, this species could occur near the proposed project area. To account for this possibility, the DOT&PF estimated that one northern elephant seal could be within estimated harassment zones each week during pile installation and removal activities, for a total of four exposures (4 weeks * 1 northern elephant seal each week = 4 total exposures).

DOT&PF's largest estimated Level A harassment zone for northern elephant seals was 308 m (see Tables 6–4 and 6–5 in the DOT&PF's application). The DOT&PF assumed that northern elephant seals would be unlikely to approach this distance without detection while underwater activities are underway, and therefore did not request that takes by Level A harassment be authorized for northern elephant seals. However, the harassment isopleths for DTH activities estimated by NMFS are much larger. In addition, the largest practical shutdown zone the DOT&PF states it can implement for northern elephant seals (400 m) (described below in the Proposed Mitigation section) is smaller than the Level A harassment isopleths that result from 240 or minutes more of 20- and 24-inch (50.8- and 60.96-cm) DTH rock socket installation. To account for this difference, NMFS followed the same method as described above for harbor seals to calculate take by Level A harassment to propose for northern elephant seals. This was achieved by calculating the ratio of the largest Level A harassment area for 20- and 24-inch (50.8- and 60.96-cm) DTH activities (*i.e.,* 0.89 km^2 for a Level A harassment distance of 768 m) minus the area of the proposed shutdown zone for elephant seals (*i.e.,* 0.27 km^2 for a shutdown zone distance of 400 m) to the area of the Level B harassment isopleth (4.34 km^2 for a Level B harassment distance of 5,162 m) (*i.e.,* (0.89 $km^2 - 0.27$ km^2)/4.34 km^2 = 0.14), and by multiplying this ratio by the total number of estimated northern elephant seal exposures (*i.e.,* 0.14 * 4 exposures = 0.56 takes, rounded up to 1 take by Level A harassment). Takes by Level B harassment were calculated as the number of estimated northern elephant exposures minus the proposed amount of take by Level A harassment to be authorized (*i.e.,* 4 − 1). Therefore, NMFS proposes to authorize one take by Level A harassment and three takes by Level B harassment for northern elephant seals, for a total of four takes.

Harbor Porpoise

There have been no systematic studies or observations of harbor porpoises specific to Hydaburg or Sukkwan Strait, and sightings of harbor porpoises have not been described in this region by local residents. As such, there is limited potential for them to occur in the proposed project area, but they could occur in low numbers as individuals have been observed in southern inland waters of southeast Alaska. Therefore, the DOT&PF estimated that up to two harbor porpoises could be within estimated harassment zones each day during pile installation and removal activities, for a total of 52 exposures (26 days * 2 porpoises per day = 52 exposures).

Harbor porpoises are small, lack a visible blow, have low dorsal fins, an overall low profile, and a short surfacing time, making them difficult to observe (Dahlheim *et al.,* 2015). These characteristics likely reduce the identification and reporting of this species. For these reasons, the DOT&PF requested that a small number of takes by Level A harassment be authorized for harbor porpoises. Based off of a maximum Level A harassment isopleth distance of 579 m for harbor porpoises estimated by the DOT&PF, the DOT&PF assumed that one pair of harbor porpoises may enter the Level A harassment zone every 7 days of in-water construction. Therefore, the DOT&PF requested that NMFS propose to authorize eight takes by Level A harassment for harbor porpoise for the proposed construction activities (4 weeks * 2 harbor porpoise per week = 8 takes by Level A harassment).

The maximum Level A harassment isopleth estimated by NMFS for harbor porpoises is 1,708 m, 2.9 times larger than the isopleth estimated by the DOT&PF (580 m). The largest practicable shutdown zone that the DOT&PF states it can implement for harbor porpoises is 500 m (described below in the Proposed Mitigation section), which is smaller than the Level A harassment isopleths estimated to result from 120 or more minutes of 20- and 24-inch (50.8- and 60.96-cm) DTH rock socket installation. To account for this difference and the increased possibility of harbor porpoises occurring outside of the shutdown zone and in the Level A harassment zone long enough to incur PTS, NMFS proposes to authorize additional takes by Level A harassment, as compared with the DOT&PF's request. Additional takes were determined by calculating the ratio of the largest Level A harassment area for 20- and 24-inch (50.8- and 60.96-cm) DTH activities (*i.e.,* 2.25 km^2 for a Level A harassment distance of 1,708 m minus the area of the proposed shutdown zone for harbor porpoises (*i.e.,* 0.42 km^2 for a shutdown zone distance of 500 m) to the area of the Level B harassment isopleth (4.34 km^2 for a Level B harassment distance of 5,162 m) (*i.e.,* $(2.25 km^2 - 0.42 km^2)/4.34 km^2 = 0.42$). We then multiplied this ratio by the total number of estimated harbor porpoise exposures to determine additional take by Level A harassment (*i.e.,* 0.42 * 8 exposures = 3.36 takes, rounded up to 4 takes). The total proposed take by Level A harassment was then calculated as the take originally proposed and requested by the DOT&PF plus the additional take calculated by NMFS to account for the larger Level A harassment zones estimated by NMFS to result from DTH activities (*i.e.,* 8 + 4), for a total of 12 takes by Level A harassment. Takes by Level B harassment were calculated as the number of estimated harbor porpoise exposures minus the proposed amount of take by Level A harassment (*i.e.,* 52 − 12). Therefore, NMFS proposes to authorize 12 takes by Level A harassment and 40 takes by Level B harassment for harbor seals, for a total of 52 takes.

Dall's Porpoise

Dall's porpoises are not expected to occur in Sukkwan Strait because the shallow water habitat of the bay is atypical of areas where Dall's porpoises usually occur. However, recent research indicates that Dall's porpoises may opportunistically exploit nearshore habitats where predators, such as killer whales, are absent. Therefore, the DOT&PF anticipates that one large Dall's porpoise pod (15 individuals) could be within the estimated harassment zones during in-water construction, for a total of 15 possible exposures.

DOT&PF's largest estimated Level A harassment zone for Dall's porpoise was 579 m. Dall's porpoises typically appear in larger groups and exhibit behaviors that make them more visible and thus easier to observe at distance. Based on this assumption, the DOT&PF did not request any takes by Level A harassment for this species. However, similar to harbor porpoises, the maximum Level A harassment zone estimated by NMFS (1,708 m) is 2.9 times larger than the zone estimated by the DOT&PF. The largest practicable shutdown zone that the DOT&PF states it can implement for Dall's porpoises during this project is 500 m (described below in the Proposed Mitigation section), which is smaller than the Level A harassment zones estimated by NMFS to result from 120 or more minutes of 20- and 24-inch (50.8- and 60.96-cm) DTH rock socket installation. To account for this difference and the increased possibility of Dall's porpoises occurring outside of the shutdown zone and in the Level A harassment zones for sufficient duration to incur PTS, NMFS proposes to add additional takes by Level A harassment, as compared with the DOT&PF's request. Because Dall's porpoises typically occur in groups, NMFS proposes to authorize 15 takes (*i.e.,* one large pod) by Level A harassment in addition to the 15 takes by Level B harassment that the DOT&PF requested, for a total of 30 takes. This would help to ensure that the DOT&PF have enough takes to account for the possibility of one large pod occurring in either the Level A or the Level B harassment zone.

Pacific White-Sided Dolphin

Pacific white-sided dolphins do not generally occur in the shallow, inland waterways of southeast Alaska. There are no records of this species occurring in Sukkwan Strait, and it is uncommon for individuals to occur in the proposed project area. However, recent fluctuations in distribution and abundance decrease the certainty in this prediction. Therefore, the DOT&PF conservatively estimated that one large group (92 individuals) of Pacific white-sided dolphins could be within estimated harassment zones during the proposed in-water construction.

DOT&PF's largest estimated Level A harassment zone for Pacific white-sided dolphins was 37 m (see Tables 6–4 and 6–5 in the DOT&PF's application). Given the large group size and more conspicuous nature of Pacific white-sided dolphins, the DOT&PF did not request any takes by Level A harassment for this species as it would be unlikely they would approach this distance for sufficient duration to incur PTS. The largest Level A harassment zone estimated by NMFS for Pacific white sided dolphins is still only 51 m. Due to the small Level A harassment zones (Table 7) and the implementation of shutdown zones, which will be larger than Level A harassment zones (described below in the Proposed Mitigation section), NMFS concurs with the DOT&PFs assessment that take by Level A harassment is not anticipated for Pacific white-sided dolphins. Therefore, NMFS proposes to authorize all 92 estimated exposures as takes by Level B harassment. Takes by Level A harassment for Pacific white-sided dolphins are not proposed to be authorized.

Killer Whale

Killer whales are observed infrequently throughout Sukkwan Strait, and their presence near Hydaburg is unlikely. However, anecdotal local information suggests that a pod may be seen in the proposed project area every few months. Therefore, the DOT&PF estimate that one killer whale pod of up to 15 individuals may be within estimated harassment zones once during the proposed pile installation and removal activities (15 total exposures).

DOT&PF's largest estimated Level A harassment zone for killer whales was 37 m (see Tables 6–4 and 6–5 in the DOT&PF's application). Because killer whales are unlikely to enter Sukkwan Strait and are relatively conspicuous, the DOT&OF did not request any takes by Level A harassment for this species as it would be unlikely they would approach this distance for sufficient duration to incur PTS. The largest Level A harassment zone for killer whales estimated by NMFS is still only 51 m (Table 7). Due to the small Level A harassment zones (Table 7) and the implementation of shutdown zones, which will be larger than Level A harassment zones (described below in the Proposed Mitigation section), NMFS concurs with the DOT&PFs assessment that take by Level A harassment is not anticipated for killer whales. Therefore, NMFS proposes to authorize all 15 estimated exposures as takes by Level B harassment. Takes by Level A harassment for killer whales are not proposed to be authorized.

Humpback Whale

Use of Sukkwan Strait by humpback whales is common but intermittent and dependent on the presence of prey fish. Based on anecdotal evidence from local residents, the DOT&PF predicts that four groups of two whales, up to eight individuals per week, may be within estimated harassment zones each week during the 4 weeks of the proposed pile installation and removal activities, for a total of 32 exposures (8 per week * 4 weeks = 32 total exposures). Wade (2021) estimated that approximately 2.4 percent of humpback whales in southeast Alaska are members of the Mexico DPS, while all others are members of the Hawaii DPS. Therefore, the DOT&PF estimates that 1 of the exposures (32 whales * 0.024 = 0.77 rounded up to 1) would be of Mexico DPS individuals and 31 exposures would be of Hawaii DPS individuals.

DOT&PF's largest estimated Level A harassment zone for humpback whales was 504 m (see Tables 6–4 and 6–5 in the DOT&PF's application). However, due to the long duration of DTH piling that is anticipated, and the potential for humpback whales to enter the Level A harassment zones from around obstructions or landforms near the proposed project area, the DOT&PF requested that NMFS propose to authorize 4 takes by Level A harassment (equivalent to two groups of two individuals) of humpback whales. Due to the small percentage of humpback whales that may belong to the Mexico DPS in southeast Alaska, the DOT&PF assumes that all takes by Level A harassment will be attributed to Hawaii DPS whales.

The largest Level A harassment zone for humpback whales, as estimated by NMFS, is 1,435 m (Table 7). The largest practicable shutdown zone that the DOT&PF states it can implement for humpback whales during this project is 1,000 m (described below in the Proposed Mitigation section), which is smaller than the Level A harassment zones estimated by NMFS to result from 300 or more minutes of 20- and 24-inch (50.8- and 60.96-cm) DTH rock socket installation. To account for this difference and the increased possibility of humpback whales occurring outside of the shutdown zone and in the Level A harassment zone long enough to incur PTS, NMFS proposes to add additional takes by Level A harassment, compared with the DOT&PF's request.

NMFS calculated additional takes by Level A harassment by determining the ratio of the largest Level A harassment area for 20- and 24-inch (50.8- and 60.96-cm) DTH activities (*i.e.,* 2.01 km^2 for a Level A harassment distance of 1,435 m) minus the area of the proposed shutdown zone for humpback whales (*i.e.,* 1.34 km^2 for a shutdown zone distance of 1,000 m) to the area of the Level B harassment isopleth (4.34 km^2 for a Level B harassment distance of 5,162 m) (*i.e.,* (2.01 km^2 − 1.34 km^2)/ 4.34 km^2 = 0.15). We then multiplied this ratio by the total number of estimated humpback whales exposures to determine additional take by Level A harassment (*i.e.,* 0.15 * 32 exposures = 4.80 takes, rounded up to 5 takes). The total proposed take by Level A harassment was then calculated as the take originally proposed and requested by the DOT&PF plus the additional take calculated by NMFS to account for the larger Level A harassment zones estimated to result from DTH activities (*i.e.,* 4 + 5), for a total of 9 takes by Level A harassment. Takes by Level B harassment were calculated as the number of estimated humpback whale exposures minus the proposed amount of take by Level A harassment (*i.e.,* 32 − 9). Therefore, NMFS proposes to authorize 9 takes by Level A harassment and 23 takes by Level B harassment for humpback whales, for a total of 32 takes. Given that approximately 2.4 percent of humpback whales in southeast Alaska are members of the Mexico DPS, NMFS assumes that one of the proposed take by Level B harassment may be attributed to a humpback whale from the Mexico DPS (32 * 2.4 percent = 0.77, rounded up to 1 take). All other takes by Level B harassment and all takes by Level A harassment (*i.e.,* 31) are assumed to be attributed to humpback whales from the Hawaii DPS.

Minke Whale

Minke whale abundance throughout southeast Alaska is low, and anecdotal reports have not included minke whales near the proposed project area. However, minke whales are distributed throughout a wide variety of habitats and have been observed elsewhere in southeast Alaska; therefore, this species could occur near the proposed project area. NMFS has previously estimated that three individual minke whales could occur near Metlakatla every 4 months during a similar activity (86 FR 43190, August 6, 2021). Therefore, DOT&PF conservatively estimated that up to three minke whales may be exposed to project-related underwater noise during the proposed pile installation and removal activities.

DOT&PF's largest estimated Level A harassment zone for minke whales was 504 m (see Tables 6–4 and 6–5 in the DOT&PF's application). Due to the low likelihood of minke whale occurrence near the proposed project site, the DOT&PF did not request any takes by Level A harassment for this species. However, the maximum Level A harassment isopleth estimated by NMFS for minke whales is 1,435 m. The largest practicable shutdown zone that the DOT&PF states it can implement for minke whales during this project is 1,000 m (described below in the Proposed Mitigation section), which is smaller than the Level A harassment isopleths estimated by NMFS to result from 300 or more minutes of 20- and 24-inch (50.8- and 60.96-cm) DTH rock socket installation. To account for this difference and the increased possibility of minke whales occurring outside of the shutdown zone and within the Level A harassment zone long enough to incur PTS, NMFS proposes to add takes by Level A harassment, compared with the DOT&PF's request.

NMFS calculated takes by Level A harassment by determining the ratio of the largest Level A harassment area for 20- and 24-inch (50.8- and 60.69-cm)

DTH activities (*i.e.,* 2.01 km^2 for a Level A harassment distance of 1,435 m) minus the area of the proposed shutdown zone for minke whales (*i.e.,* 1.34 km^2 for a shutdown zone distance of 1,000 m) to the area of the Level B harassment isopleth (4.34 km^2) for a Level B harassment distance of 5,162 m) (*i.e.,* (2.01 km^2 − 1.34 km^2)/4.34 km^2 = 0.15). We then multiplied this ratio by the total number of estimated minke whales exposures to determine take by Level A harassment (*i.e.,* 0.15 * 3 exposures = 0.45 takes, rounded up to 1 take by Level A harassment). Takes by Level B harassment were calculated as the number of estimated minke whale exposures minus the proposed amount of take by Level A harassment (*i.e.,* 3 − 1). Therefore, NMFS proposes to authorize one take by Level A harassment and two takes by Level B harassment for minke whales, for a total of three takes.

In summary, the total amount of Level A harassment and Level B harassment authorized for each marine mammal stock is presented in Table 8.

TABLE 8—AMOUNT OF TAKE AS A PERCENTAGE OF STOCK ABUNDANCE, BY STOCK AND HARASSMENT TYPE

Species	Stock or DPS	Authorized take			Percent of stock
		Level A	Level B	Total	
Steller sea lion	Eastern	0	240	240	0.56
Harbor seals	Dixon/Cape Decision	78	130	208	0.89
Northern elephant seals	CA Breeding	1	3	4	<0.01
Harbor porpoises	Southeast Alaska	12	40	52	[1] 0.47
Dall's porpoises	Alaska	15	15	30	[2] 0.23
Pacific white-sided dolphins	N Pacific	0	92	92	0.34
Killer whales	Eastern North Pacific Alaska Resident	0	15	15	[3] 0.78
	Eastern Northern Pacific Northern Resident.				[3] 4.97
	West Coast Transient				[3] 4.30
Humpback whales	Central N Pacific	9	23	32	0.32
Minke whales	Alaska	1	2	3	....

[1] NMFS does not have an official abundance estimate for this stock; therefore, this percentage is based off of the most recent abundance estimate for this stock (11,146; Hobbs and Waite, 2010).
[2] NMFS does not have an official abundance estimate for this stock; therefore, this percentage is based off of the minimum population estimate for this stock (13,110; Muto *et al.,* 2022).
[3] NMFS conservatively assumes that all 15 takes occur to each stock.

Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, NMFS considers two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned); and

(2) The practicability of the measures for applicant implementation, which may consider such things as cost, and impact on operations.

The DOT&PF must employ the following standard mitigation measures, as included in the proposed IHA:

- Ensure that construction supervisors and crews, the monitoring team and relevant DOT&PF staff are trained prior to the start of all pile driving and DTH activity, so that responsibilities, communication procedures, monitoring protocols, and operational procedures are clearly understood. New personnel joining during the project must be trained prior to commencing work;
- Avoid direct physical interaction with marine mammals during construction activity. If a marine mammal comes within 10 m of such activity, operations shall cease. Should a marine mammal come within 10 m of a vessel in transit, the boat operator would reduce vessel speed to the minimum level required to maintain steerage and safe working conditions. If human safety is at risk, the in-water activity will be allowed to continue until it is safe to stop;
- Employ PSOs and establish monitoring locations as described in Section 5 of the IHA. The DOT&PF must monitor the project area to the maximum extent possible based on the required number of PSOs, required monitoring locations, and environmental conditions. For all pile driving and DTH activities at least two PSOs must be used;
- For all pile driving/removal activities, a minimum 30 m shutdown zone must be established. The purpose of a shutdown zone is generally to define an area within which shutdown of activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area). Shutdown zones will vary based on the type of driving/removal activity type and by marine mammal hearing group (see Table 9). Here, shutdown zones are larger than or equivalent to the calculated Level A harassment isopleths shown in Table 7, except when indicated due to practicability and effectiveness concerns. These concerns include the limited viewpoints available

to station PSOs along Sukkwan Strait, the presence of landmasses that may obstruct viewpoints, and decreased effectiveness in sighting marine mammals at increased distances. Further, shutdown zones at greater distances than proposed in Table 9 would likely result in the DOT&PFs activities being shut down more frequently than is practicable for them to maintain their project schedule. Note the shutdown zones for DTH activity proposed in this notice differ from those proposed by the DOT&PF (see Table 6–5 of their application) based on the increased Level A harassment isopleth estimates resulting from NMFS' analysis (see detailed discussion in the Estimated Take section);

TABLE 9—PROPOSED SHUTDOWN ZONES DURING PROJECT ACTIVITIES

Activity	Pile size	Minutes (min) or strikes per pile	Piles per day	Shutdown zone (m)				
				LF	MF	HF	PW	OW
Vibratory Installation	20- and 24-inch	≤30 min	≤10	30	30	30	30	30
Vibratory Removal	16- and 24-inch	30 min	2	30	30	30	30	30
Impact Installation	20-inch	50 strikes	1	50	30	60	30	30
		50 strikes	2	80	30	90	[1] 40	30
	24-inch	50 strikes	1	70	30	80	40	30
		50 strikes	2	[1] 100	30	120	60	30
DTH (Rock Socket)	20- and 24-inch	60 min	1	360	30	430	200	30
		120 min	1	570	30	[2] 500	310	30
		180 min	1	750	30	[2] 500	400	30
		240 min	1	1,000	40	[2] 500	[2] 400	40
		300 min	1	[2] 1,000	40	[2] 500	[2] 400	50
		360 min	1	[2] 1,000	50	[2] 500	[2] 400	50
		420 min	1	[2] 1,000	50	[2] 500	[2] 400	60
		480 min	1	[2] 1,000	60	[2] 500	[2] 400	60
DTH (Tension Anchor)	8-inch	60 min	1	40	30	50	30	30
		120 min	1	60	30	70	40	30
		180 min	1	80	30	90	[1] 40	30
		240 min	1	100	30	110	30	30
		300 min	1	110	30	130	60	30
		360 min	1	120	30	150	70	30
		420 min	1	140	30	160	80	30
		480 min	1	150	30	180	80	30

[1] The proposed shutdown zone is equivalent to the Level A harassment distance.
[2] The proposed shutdown is smaller than the Level A harassment distance.

- DOT&PF anticipates that the maximum number of piles to be installed and or the daily duration of pile driving or DTH use may vary significantly, with large differences in maximum zone sizes possible depending on the work planned for a given day (Table 7). Given this uncertainty, DOT&PF will utilize a tiered system to identify and monitor the appropriate Level A harassment zones and shutdown zones on a daily basis, based on the maximum expected number of piles to be installed (impact or vibratory pile driving) or the maximum expected DTH duration for each day. At the start of each work day, DOT&PF will determine the maximum scenario for that day (according to the defined duration intervals in Tables 7 and 9), which will determine the appropriate Level A harassment isopleth and associated shutdown zone for that day. This Level A harassment zone (Table 7) and associated shutdown zone (Table 9) must be observed by PSO(s) for the entire work day, regardless of whether DOT&PF ultimately meets the anticipated scenario parameters for that day;
- Marine mammals observed anywhere within visual range of the PSO will be tracked relative to construction activities. If a marine mammal is observed entering or within the shutdown zones indicated in Table 9, pile driving or DTH activities must be delayed or halted. If pile driving or DTH activities are delayed or halted due to the presence of a marine mammal, the activity may not commence or resume until either the animal has voluntarily exited and been visually confirmed beyond the shutdown zone (Table 9) or 15 minutes have passed without re-detection of the animal;
- Monitoring must take place from 30 minutes prior to initiation of pile driving (*i.e.,* pre-clearance monitoring) through 30 minutes post-completion of pile driving or DTH activity;
- Pre-start clearance monitoring must be conducted during periods of visibility sufficient for the lead PSO to determine that the shutdown zones indicated in Table 9 are clear of marine mammals. Pile driving may commence following 30 minutes of observation when the determination is made that the shutdown zones are clear of marine mammals;
- The DOT&PF must use soft start techniques when impact pile driving. Soft start requires contractors to provide an initial set of three strikes at reduced energy, followed by a 30-second waiting period, then two subsequent reduced energy strike sets. A soft start must be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of 30 minutes or longer. Soft starts will not be used for vibratory pile installation and removal or for DTH activities. PSOs shall begin observing for marine mammals 30 minutes before ''soft start'' or in-water pile installation or removal begins;
- Pile driving activity must be halted upon observation of either a species for which incidental take is not authorized or a species for which incidental take has been authorized but the authorized number of takes has been met, entering or within the harassment zone;

Based on our evaluation of the applicant's proposed measures, as well as other measures considered by NMFS, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, areas of similar significance, and on the availability of such species or stock for subsistence uses.

Proposed Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the

MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104(a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present while conducting the activities. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.,* presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.,* source characterization, propagation, ambient noise); (2) affected species (*e.g.,* life history, dive patterns); (3) co-occurrence of marine mammal species with the activity; or (4) biological or behavioral context of exposure (*e.g.,* age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.,* marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

Visual Monitoring

Monitoring must be conducted by qualified, NMFS-approved PSOs, in accordance with the following:

- PSOs must be independent of the activity contractor (*e.g.,* employed by a subcontractor) and have no other assigned tasks during monitoring periods. At least one PSO must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued IHA or Letter of Concurrence. Other PSOs may substitute other relevant experience, education (degree in biological science or related field), or training for prior experience performing the duties of a. PSOs must be approved by NMFS prior to beginning any activity subject to these IHAs;
- DOT&PF must employ at least two PSOs during all pile driving and DTH activities. A minimum of one PSO must be assigned to the active pile driving or DTH location to monitor for marine mammals and implement shutdown/delay procedures when applicable by calling for the shutdown to the hammer operator. At least one additional PSO is also required, and should be placed at the best practical vantage point(s) to ensure that the shutdown zones are fully monitored and as much as the Level B harassment zones are monitored as practicable; though the observation points may vary depending on the construction activity and location of the piles;
- Where a team of three or more PSOs is required, a lead observer or monitoring coordinator must be designated. The lead observer must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization;
- PSOs would use a hand-held GPS device, rangefinder, or reticle binoculars to verify the required monitoring distance from the project site;
- PSOs must record all observations of marine mammals, regardless of distance from the pile being driven. PSOs shall document any behavioral reactions in concert with distance from piles being driven or removed;
- PSOs must have the following additional qualifications:
- Ability to conduct field observations and collect data according to assigned protocols;
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to record required information including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior; and
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

Reporting

A draft marine mammal monitoring report would be submitted to NMFS within 90 days after the completion of pile driving and DTH activities, or 60 days prior to a requested date of issuance of any future IHAs for projects at the same location, whichever comes first. The reports would include an overall description of work completed, a narrative regarding marine mammal sightings, and associated PSO data sheets. Specifically, the reports must include:

- Dates and times (begin and end) of all marine mammal monitoring;
- Construction activities occurring during each daily observation period, including the number and type of piles driven or removed and by what method (*i.e.,* impact, vibratory, or DTH) and the total equipment duration for vibratory installation, removal and DTH for each pile or total number of strikes for each pile (impact driving);
- PSO locations during marine mammal monitoring;
- Environmental conditions during monitoring periods (at beginning and end of PSO shift and whenever conditions change significantly), including Beaufort sea state and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon, and estimated observable distance;
- Upon observation of a marine mammal, the following information: name of PSO who sighted the animal(s) and PSO location and activity at time of sighting; time of sighting; identification of the animal(s) (*e.g.,* genus/species, lowest possible taxonomic level, or unidentified), PSO confidence in identification, and the composition of the group if there is a mix of species; distance and bearing of each marine mammal observed relative to the pile being driven for each sighting (if pile driving was occurring at time of sighting); estimated number of animals (minimum, maximum, and best estimate); estimated number of animals by cohort (adults, juveniles, neonates, group composition, sex class, *etc.*); animal's closest point of approach and estimated time spent within the harassment zone; description of any marine mammal behavioral observations (*e.g.,* observed behaviors such as feeding or traveling), including an assessment of behavioral responses thought to have resulted from the activity (*e.g.,* no

response or changes in behavioral state such as ceasing feeding, changing direction, flushing, or breaching);

- Number of marine mammals detected within the harassment zones and shutdown zones, by species;
- Detailed information about any implementation of any mitigation triggered (*e.g.,* shutdowns and delays), a description of specific actions that ensued, and resulting changes in behavior of the animal(s), if any;

If no comments are received from NMFS within 30 days, the draft final reports would constitute the final reports. If comments are received, a final report addressing NMFS comments must be submitted within 30 days after receipt of comments.

Reporting Injured or Dead Marine Mammals

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, the IHA-holder must immediately cease the specified activities and report the incident to the Office of Protected Resources, NMFS (*PR.ITP.MonitoringReports@noaa.gov*), and to the Alaska Regional Stranding Coordinator as soon as feasible. If the death or injury was clearly caused by the specified activity, the DOT&PF must immediately cease the specified activities until NMFS is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of the IHAs. The DOT&PF must not resume their activities until notified by NMFS. The report must include the following information:

- Time, date, and location (latitude and longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.,* population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be ''taken'' through harassment, NMFS considers other factors, such as the likely nature of any impacts or responses (*e.g.,* intensity, duration), the context of any impacts or responses (*e.g.,* critical reproductive time or location, foraging impacts affecting energetics), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS' implementing regulations (54 FR 40338, September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the baseline (*e.g.,* as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, the majority of our analysis applies to all the species listed in Table 2, given that many of the anticipated effects of the DOT&PFs construction activities on different marine mammal stocks are expected to be relatively similar in nature. Where there are meaningful differences between species or stocks, or groups of species, in anticipated individual responses to activities, impact of expected take on the population due to differences in population status, or impacts on habitat, they are described independently in the analysis below.

Pile driving and DTH activities associated with the project, as outlined previously, have the potential to disturb or displace marine mammals. Specifically, the specified activities may result in take, in the form of Level B harassment and, for some species Level A harassment, from underwater sounds generated by pile driving and DTH systems. Potential takes could occur if marine mammals are present in zones ensonified above the thresholds for Level B harassment or Level A harassment, identified above, while activities are underway.

The DOT&PF's proposed activities and associated impacts will occur within a limited, confined area of the stocks' range. The work would occur in the vicinity of the seaplane dock immediately adjacent to Hydaburg and sound from the proposed activities would be blocked by Sukkwan Island, Spook Island, Mushroom Island, and the coastline along Prince of Wales Island both southeast and northwest of the proposed project site (see Figure 1–2 in the DOT&PF's application) to a maximum distance of 5,162 m and area of 4.34 km^2. The intensity and duration of take by Level A harassment and Level B harassment will be minimized through use of mitigation measures described herein. Further the amount of take authorized is small when compared to stock abundance. In addition, NMFS does not anticipate that serious injury or mortality will occur as a result of the DOT&PF's planned activity given the nature of the activity, even in the absence of required mitigation.

Exposures to elevated sound levels produced during pile driving and DTH may cause behavioral disturbance of some individuals. Behavioral responses of marine mammals to pile driving, pile removal, and DTH systems at the proposed project site are expected to be mild, short term, and temporary. Effects on individuals that are taken by Level B harassment, as enumerated in the Estimated Take section, on the basis of reports in the literature as well as monitoring from other similar activities, will likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring) (*e.g.,* Thorson and Reyff, 2006). Marine mammals within the Level B harassment zones may not show any visual cues they are disturbed by activities or they could become alert, avoid the area, leave the area, or display other mild responses that are not observable such as changes in vocalization patterns or increased haul out time (Thorson and Reyff, 2006). Additionally, some of the species present in the region will only be present temporarily based on seasonal patterns or during transit between other habitats. These temporarily present species will be exposed to even smaller periods of noise-generating activity, further decreasing the impacts. Most likely, individual animals will simply move away from the sound source and be temporarily displaced from the area, although even this reaction has been observed primarily only in association with impact pile driving. Because DOT&PF's activities could occur during any season, takes may occur during important feeding times. The project area though represents a small portion of available foraging habitat and impacts on marine mammal feeding for all species should be minimal.

The activities analyzed here are similar to numerous other construction activities conducted along southeastern Alaska (*e.g.,* 86 FR 43190, August 6, 2021; 87 FR 15387, March 18, 2022), which have taken place with no known long-term adverse consequences from behavioral harassment. These reactions and behavioral changes are expected to subside quickly when the exposures cease and, therefore, no such long-term adverse consequences should be expected (*e.g.,* Graham *et al.,* 2017). The intensity of Level B harassment events will be minimized through use of mitigation measures described herein, which were not quantitatively factored into the take estimates. The DOT&PF will use at least two PSOs stationed strategically to increase detectability of marine mammals during in-water pile driving and DTH activities, enabling a high rate of success in implementation of shutdowns to avoid or minimize injury for most species. Further, given the absence of any major rookeries and haulouts within the estimated harassment zones, we assume that potential takes by Level B harassment would have an inconsequential short-term effect on individuals and would not result in population-level impacts.

As stated in the mitigation section, DOT&PF will implement shutdown zones that equal or exceed many of the Level A harassment isopleths shown in Table 8. Take by Level A harassment is proposed for authorization for some species (harbor seals, northern elephant seals, harbor porpoises, Dall's porpoises, humpback whales, and minke whales) to account for the potential that an animal could enter and remain within the Level A harassment zone for a duration long enough to incur PTS. Any take by Level A harassment is expected to arise from, at most, a small degree of PTS because animals would need to be exposed to higher levels and/or longer duration than are expected to occur here in order to incur any more than a small degree of PTS.

Due to the levels and durations of likely exposure, animals that experience PTS will likely only receive slight PTS, *i.e.,* minor degradation of hearing capabilities within regions of hearing that align most completely with the frequency range of the energy produced by DOT&PF's proposed in-water construction activities (*i.e.,* the low-frequency region below 2 kHz), not severe hearing impairment or impairment in the reigns of greatest hearing sensitivity. If hearing impairment does occur, it is most likely that the affected animal will lose a few dBs in its hearing sensitivity, which in most cases is not likely to meaningfully affect its ability to forage and communicate with conspecifics. There are no data to suggest that a single instance in which an animal accrues PTS (or TTS) and is subject to behavioral disturbance would result in impacts to reproduction or survival. If PTS were to occur, it would be at a lower level likely to accrue to a relatively small portion of the population by being a stationary activity in one particular location. Additionally, and as noted previously, some subset of the individuals that are behaviorally harassed could also simultaneously incur some small degree of TTS for a short duration of time. Because of the small degree anticipated, though, any PTS or TTS potentially incurred here is not expected to adversely impact individual fitness, let alone annual rates of recruitment or survival.

Theoretically, repeated, sequential exposure to pile driving noise over a long duration could result in more severe impacts to individuals that could affect a population. However, the limited number of non-consecutive pile driving days for this project and the absence of any pinniped haulouts or other known cetacean residency patterns in the proposed action area means that these types of impacts are not anticipated.

For all species except humpback whales, there are no known BIAs near the project zone that will be impacted by DOT&PF's planned activities. For humpback whales, the whole of southeast Alaska is a seasonal feeding BIA from May through September (Wild *et al.,* 2023), however, Sukkwan Strait is a small passageway and represents a very small portion of the total available habitat. Also, while southeast Alaska is considered an important area for feeding humpback during this time, it is not currently designated as critical habitat for humpback whales (86 FR 21082, April 21, 2021).

The project is also not expected to have significant adverse effects on any marine mammal habitat. The project activities will not modify existing marine mammal habitat since the project will occur within the same footprint as existing marine infrastructure. Impacts to the immediate substrate are anticipated, but these would be limited to minor, temporary suspension of sediments, which could impact water quality and visibility for a short amount of time but which would not be expected to have any effects on individual marine mammals.

In addition, impacts to marine mammal prey species are expected to be minor and temporary and to have, at most, short-term effects on foraging of individual marine mammals, and likely no effect on the populations of marine mammals as a whole. Overall, the area impacted by the project is very small compared to the available surrounding habitat, and does not include habitat of particular importance. The most likely impact to prey will be temporary behavioral avoidance of the immediate area. During construction activities, it is expected that some fish and marine mammals would temporarily leave the area of disturbance, thus impacting marine mammals' foraging opportunities in a limited portion of the foraging range. But, because of the relatively small area of the habitat that may be affected, and lack of any habitat of particular importance, the impacts to marine mammal habitat are not expected to cause significant or long-term negative consequences.

In summary and as described above, the following factors primarily support our preliminary determination that the impacts resulting from this activity are not expected to adversely affect any of the species or stocks through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or authorized;
- Level A harassment proposed for authorization is expected to be of a lower degree that would not impact the fitness of any animals;
- Anticipated incidents of Level B harassment consist of, at worst, temporary modifications in behavior;
- The required mitigation measures (*i.e.,* soft starts, shutdown zones) are expected to be effective in reducing the effects of the specified activity by minimizing the numbers of marine mammals exposed to injurious levels of sound, and by ensuring that any take by Level A harassment is, at most, a small degree of PTS;
- The intensity of anticipated takes by Level B harassment is low for all stocks and will not be of a duration or intensity expected to result in impacts on reproduction or survival;
- Minimal impacts to marine mammal habitat/prey are expected;
- The only known area of specific biological importance covers a broad area of southeast Alaska for humpback whales, and the project area is a very small portion of that BIA. No other known areas of particular biological importance to any of the affected species or stocks are impacted by the activity, including ESA-designated critical habitat;
- The project area represents a very small portion of the available foraging area for all potentially impacted marine

mammal species and stocks and anticipated habitat impacts are minor; and

- Monitoring reports from similar work in southeast Alaska have documented little to no effect on individuals of the same species impacted by the specified activities.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted previously, only small numbers of incidental take may be authorized under section 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one-third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

The maximum annual amount of take NMFS proposes to authorize for five marine mammal stocks is below one-third of the estimated stock abundance for all species (in fact, take of individuals is less than five percent of the abundance of all affected stocks, see Table 8). The number of animals proposed for authorization to be taken from these stocks would be considered small relative to the relevant stock's abundances even if each estimated take occurred to a new individual. Some individuals may return multiple times in a day, but PSOs would count them as separate individuals if they cannot be individually identified.

The Alaska stock of Dall's porpoise has no official NMFS abundance estimate for this area, as the most recent estimate is greater than eight years old. Abundance estimates for Dall's porpoise in inland waters of southeast Alaska were calculated from 19 line-transect vessel surveys from 1991 to 2012 (Jefferson *et al.,* 2019). Abundance across the whole period was estimated at 5,381 (CV = 0.25), 2,680 (CV = 0.20), and 1,637 (CV = 0.23) in the spring, summer, and fall, respectively (Jefferson *et al.,* 2019). The minimum population estimate (N_{MIN}) for the entire Alaska stock is assumed to correspond to the point estimate of a 2015 vessel-based abundance computed by Rone *et al.* (2017) in the Gulf of Alaska (N = 13,110; CV = 0.22) (Muto *et al.,* 2022); however, the study area of this survey corresponds to a small fraction of the range of the stock and, thus it is reasonable to assume that the stock size is equal to or greater than that estimate (Muto *et al.,* 2022). Therefore, the 22 takes of this stock proposed for authorization clearly represent small numbers of this stock.

Likewise, the Southeast Alaska stock of harbor porpoise has no official NMFS abundance estimate as the most recent estimate is greater than 8 years old. Aerial surveys of this stock were conducted in June and July 1997 and resulted in an abundance estimate of 11,146 harbor porpoise in the coastal and inland waters of southeast Alaska (Hobbs and Waite, 2010). The minimum population estimate for this stock is 1,057 individuals; however, this estimate represents some portion of the total number of animals in the stock and is not corrected for animals missed on the survey track line for which the estimate is based. Therefore, this estimate is negatively biased (Muto *et al,* 2022). Regardless, the 52 takes of this stock proposed for authorization represent small numbers of this stock.

There is no current or historical estimate of the Alaska minke whale stock, but minke whale abundance has been estimated to be over 1,000 whales in portions of Alaska (Muto *et al.,* 2022) so the 3 takes proposed for authorization represent small numbers of this stock. Additionally, the range of the Alaska stock of minke whales is extensive, stretching from the Canadian Pacific coast to the Chukchi Sea, and DOT&PF's project area impacts a small portion of this range. Therefore, the three takes of minke whale proposed for authorization is small relative to estimated survey abundance, even if each proposed take occurred to a new individual.

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals would be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

In order to issue an IHA, NMFS must find that the specified activity will not have an ''unmitigable adverse impact'' on the subsistence uses of the affected marine mammal species or stocks by Alaskan Natives. NMFS has defined ''unmitigable adverse impact'' in 50 CFR 216.103 as an impact resulting from the specified activity: (1) that is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) causing the marine mammals to abandon or avoid hunting areas; (ii) directly displacing subsistence users; or (iii) placing physical barriers between the marine mammals and the subsistence hunters; and (2) that cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

Alaska Natives have traditionally harvested subsistence resources in southeast Alaska for many hundreds of years, particularly large terrestrial mammals, marine mammals, salmon, and other fish (Alaska Department of Fish and Game (ADF&G), 1997). Harbor seals and sea otters are reported to be the marine mammal species most regularly harvested for subsistence in the waters surrounding Hydaburg (NOAA, 2013). An estimated 14.4 harbor seals were harvested by Hydaburg residents every year from 2000 through 2008 (ADF&G, 2009a, 2009b). Hunting usually occurs in the late fall and winter (ADF&G, 2009a). The ADF&G has not recorded harvest of cetaceans from Hydaburg (ADF&G, 2022). There are no subsistence activities near the proposed project that target humpback whales, and subsistence hunters rarely target Steller sea lions near the proposed project area.

Approximately 93 percent of Hydaburg residents identified as Alaska Native (Sill and Koster, 2017) in 2012. Nearly half of all households harvested wild resources in 2012, with nearly all Hydaburg households using salmon, non-salmon fish, marine invertebrates, and vegetation (Sill and Koster, 2017). Only six percent of Hydaburg households participated in the hunting, use, or receiving of harbor seals in 2012, whereas up to eight percent used sea otters (Sill and Koster, 2017). Based on data from 2012, marine mammals account for approximately one percent (1,666 pounds or 756 kg) of all subsistence harvest in Hydaburg (Sill and Koster, 2017).

All proposed pile driving and DTH activities will take place in the vicinity of seaplane dock immediately adjacent to Hydaburg where subsistence activities do not generally occur. The proposed project will not have an adverse impact on the availability of marine mammals for subsistence use at locations farther away. Some minor, short-term disturbance of the harbor seals or sea otters could occur, but this is not likely to have any measurable effect on subsistence harvest activities in the region. No changes to availability of subsistence resources will result from the specified activities. Additionally, DOT&PF is working with Haida Elders on the project to raise awareness and collaborate on the project within the local community.

Based on the description of the specified activity, the measures described to minimize adverse effects on the availability of marine mammals for subsistence purposes, and the proposed mitigation and monitoring measures, NMFS has preliminarily determined that there will not be an unmitigable adverse impact on subsistence uses from the DOT&PF's proposed activities.

Endangered Species Act

Section 7(a)(2) of the ESA (16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species, in this case with NMFS' Alaska Regional Office (AKRO).

NMFS is proposing to authorize take of the Central North Pacific stock of humpback whales, of which a portion belong to the Mexico DPS of humpback whales, which are ESA-listed. The Permits and Conservation Division has requested initiation of section 7 consultation with the AKRO for the issuance of this IHA. NMFS will conclude the ESA consultation prior to reaching a determination regarding the proposed issuance of the authorization.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to the DOT&PF for conducting pile driving and DTH activities during of the Hydaburg Seaplane Base Refurbishment Project in Hydaburg, Alaska beginning in September 2023, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-construction-activities.*

Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this notice of proposed IHA for the proposed construction activities. We also request comment on the potential renewal of this proposed IHA as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform decisions on the request for this IHA or a subsequent renewal IHA.

On a case-by-case basis, NMFS may issue a one-time, 1-year renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical activities as described in the Description of Proposed Activities section of this notice is planned, or (2) the activities as described in the Description of Proposed Activities section of this notice would not be completed by the time the IHA expires and a renewal would allow for completion of the activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to the needed renewal IHA effective date (recognizing that the renewal IHA expiration date cannot extend beyond 1 year from expiration of the initial IHA);
- The request for renewal must include the following:

(1) An explanation that the activities to be conducted under the requested renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.,* reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take); and

(2) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

Upon review of the request for renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: July 10, 2023.

Kimberly Damon-Randall,

Director, Office of Protected Resources, National Marine Fisheries Service.

[FR Doc. 2023–14939 Filed 7–14–23; 8:45 am]

BILLING CODE 3510–22–P